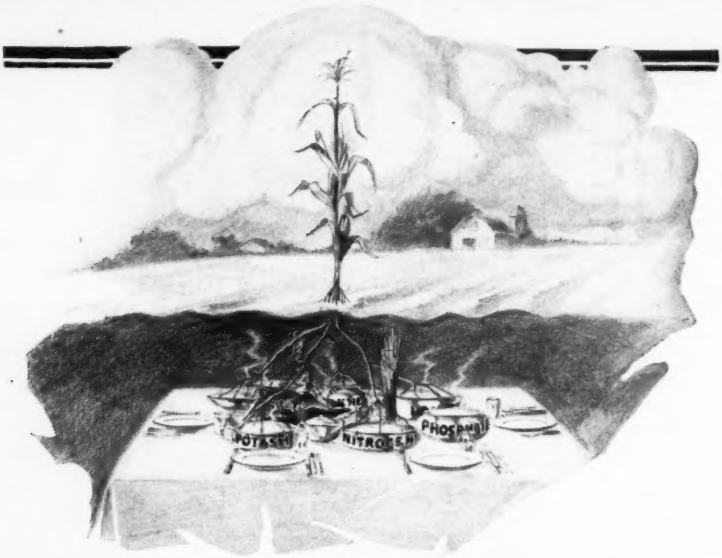
Better Crops

The Pocket B[illegible]riculture

March 192[illegible]

In this issue—Howard M. Gore—Frank A. Simmonds—Dr. Frank Crane—H. R. Smalley—Jeff McDermid—C. J. Brand



The food you cannot see!

ALL soils *look* somewhat alike. Some may be darker than others, or of a closer texture, but after all, soil in itself is but a *receptacle*—a bowl in which Nature places her food for plants. The important part of soil is the food it contains. You cannot *see* the food. You cannot tell how *much* of any of the important plant-foods remain in the ground.

But the crops know how much food there is. Their groping roots, seeking here and there in the soil for moisture and food, soon discover whether the soil is fertile or *futile*.

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A Glance Ahead

In this issue we are starting two new departments which will interest you. Our Washington correspondent, Mr. Butlar, will send us each month a brief digest of the bills pending in Congress which affect the farmer and agriculture. You will find his first article under the title, "The Legislative Grist Mill."

At one time I hoped to include a summary of the bulletins and publications of the Department of Agriculture and the various state extension services. I find, however, that this would take up so much room that I have decided to confine myself instead to those publications which seem to me most interesting and worth while. Each month, then, we will select the more important publications and briefly summarize them under the title, "Worth While Reading."

Among the many interesting features in our April issue will be the following articles:

MARKETING A HUNDRED MILLION DOLLAR CROP
by W. B. Geissinger

One of the foremost cooperative enterprises in this country is the California Fruit Growers' Exchange. Mr. Geissinger, who is connected with it, outlines its policies and methods in a stimulating article.

FOOD FROM SUNFLOWERS
by Dean Robert Stewart

The use of sunflowers as ensilage has interesting possibilities. Dean Stewart tells of experiments that have been made along this line.

REDUCING CROP LOSSES BY SATISFACTORY INSURANCE
by George H. Dacy

They are insuring almost everything now-a-days. Why not crops? Watch for Mr. Dacy's article. It will set you thinking.

A number of other interesting articles and departments not forgetting

Yours truly,

Jeff

Armour's

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You would not waste one man's time by having two men drive a four-horse pulverizer, when one man can do it equally as well.

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Better Crops

The Pocket Book of Agriculture

VOLUME II NUMBER ONE

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¶ These corn stalks, on a farm in the Yakima Valley in the State of Washington, were 20 feet, 3 inches high. One acre produced 28½ tons of ensilage corn—a new record for the United States. The ordinary corn harvester broke down under the height and toughness of these stalks and the corn had to be cut by hand.

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COOPERATE —can you do it?

By Jeff McDermid

WE hear a great deal about cooperation these days. There are cooperative stores, cooperative marketing, cooperative this and cooperative that. The word itself is getting so abused and battered and dog-eared that I hesitate to write about it—and I wouldn't have used cooperation at all had there been another word of precisely the same meaning.

THERE is a danger in the too sudden popularity of this word—folks may become imbued with the idea that cooperation is a species of economic panacea that will cure economic ills by merely rubbing it on the afflicted spot.

Not so, my friends. Cooperation starts with a subtle stirring of the atoms of friendliness and the love-corpuscles in the brain. Cooperation is mental; it springs from the same source as neighborliness, the desire to see others become successful. Cooperation means subjugation of selfish interests to those of the common herd of which we are but a part.

Cooperation is a movement of the spirit—not an industrial or

economic cure-all. Certainly there must be physical means of administering it; but the means, to my view, is as unimportant as the spoon in which medicine is taken—it is a vehicle, nothing more. Until we get this viewpoint we are but pseudo-cooperators, crying in the wilderness a dogma or ritual, the words of which we have been taught to utter, but the spirit of which is foreign to our understanding.

COOPERATION is mental, and it is elemental.

Cooperation is one of Nature's first laws. How useless an upper jaw without a lower jaw against which food can be chewed. The Universe is harmoniously cooperating every moment of the day and night; with the cessation of harmonious joint operation this world might dash itself into atoms against a far star.

To prove to yourself how cooperation pays, try to pick up a pin with your thumb alone. It cannot be done; until the thumb and a finger agree to cooperate the pin stays there. But let the thumb and first finger agree to work harmoniously together and not only are pins picked up, but the work of the world is done.

Nature believes in both cooperation and competition. I can prove it to you and at the same time demonstrate that each is useful in its place. Seldom do we find a cat and a dog cooperating. The dog chases the cat because their interests are not identical; they have different aims in life and a consequent inherent hate is engendered that passes down from generation to generation. Here is a species of competition set on foot by Nature, who believes in the survival of the fittest.

But watch a dog madly in pursuit of a hated member of the female feline family; you will see in a glance Nature's dual uses for competition and for cooperation. The dog and cat are bitter competitors; but all parts of the dog cooperate beautifully and harmoniously because their interests are as one. And all parts of the cat work sympathetically and in unison, because each part knows that it is sorely needed if this life and death race with the feared competitor be won—if any part, such as a hind leg, refuses to cooperate in a time of stress like this, it is not harming the rest of the cat any more than itself will be harmed. The hind legs work as fast as they can and in perfect harmony with the muscles that control the front legs —all with a view to covering as much ground as possible in as short a space of time as is consistent with good form!

IN other words, Nature has arranged in her perfect plan for cooperation between parts whose interests are identical and competition between groups of these parts whose interests are opposed.

Herbert Spencer, famous scientist, said, "Society flourishes by the antagonism of its atoms." I cannot believe this. It seems to me that to win any great success the individual must be subordinated to the collective wish—the cat's hind leg must think first of the welfare of the whole cat and lastly or not at all of its own welfare, for if the cat loses its life, the leg dies also.

If men are to progress it must come through intelligent cooperation between groups of like minded individuals whose interests and aims and plans are (*turn to page 70*)

How One COMMUNITY Solved *a* Big *Problem*

¶A cooperative undertaking proved successful in this county

By Miles H. Fairbank

County Agent, Howard County, Maryland

WHEN the Farm Bureau Local was organized at Pfeiffer's Corner, down in Howard County, Maryland they (that is the members), immediately turned their attention towards a program of work. The members of the Pfeiffer's Corner Local are among those who believe that the Farm Bureau is an organization that should be used to improve agriculture from a production as well as an economic standpoint. They are a live bunch, those fellows, and they knew that they had much cleaning up to do in their own backyard before they howled around about prices, taxes and the rest.

So, together with the writer, a program committee sat down one day last winter to map out a program of work. The proceedings of that day need not be recorded.

There were arguments, a few storms and several amusing incidents, and late that afternoon the meeting adjourned, but not before working out a very comprehensive, not to mention, ambitious program to be taken up during the coming year.

Neither do we need to discuss the various phases of that program. Practically all of the projects were carried out. Now looking back on the year's work, it is apparent that the project that achieved greatest success and accomplished the greatest good was the cooperative spray ring.

Pfeiffer's Corner is a community of small orchard owners. Practically all of the farmers in that part of Howard County depend on their truck crops and fruit as a principal source of income. And yet, while they knew from practical experience the value of spraying, very few orchards even received a full complete spray schedule. The reasons for this were the same as those confronting any owner of a small farm orchard. First, they could only afford to use small barrel outfits which, even at the best, can be expected to give only average results. The biggest problem, however, is to find time to put on the summer sprays during the rush of farm work. All of these problems are overcome by the spray ring.

THE spray ring as organized had seventeen members with a total of twenty-eight (*turn to page 68*)

The Chinese Burbank of Florida's Citrus Industry

This Chinaman specializes in solving horticultural riddles. Lue Gim Gong ranks as America's leading orange breeder

By G. H. Dacy

SPEAKING of horticultural magicians, don't forget to give due credit to Lue Gim Gong, Florida's wizard orange grower. Lue can make an ordinary orange or a grapefruit do most anything except talk and turn a sommersault. He is a veritable Chinese Burbank—an amateur scientist who has achieved more than any other southern producer in developing and perfecting new sons and daughters of our great citrus industry.

THIS talented and educated Chinaman produces new types of oranges, grapefruit, tangerines and mandarines with skill as great as that shown by the artist who paints a masterpiece or by the sculptor who transforms a mass of clay into a symmetrical and graceful statue. A variety of oranges that can be stored directly on the tree for from one to four years after attaining maturity without impairing the marketability of the luscious fruit is Lue's most notable contribution to modern agriculture.

The creation of new living plants, the training of them to bear bountifully, the intercrossing of such varieties on others for their mutual improvement — such activities require a comprehensive knowledge of both the vagaries of nature and science. Their perfection demands the nicety of adjustment between laboratory theory and sensible field practice which will favor the potential commercialization of the products that are produced. Assets like these are the tools which the Chinese Burbank uses so efficiently.

Florida and California citrus industries pay homage to Lue Gim Gong who has worked out the solutions of their most perplexing plant breeding puzzles. The Lue Gim Gong orange is a marvel of plant growth. It is a luscious, sweet,

heavybearing orange that commands premium prices wheresoever marketed. The fact that the oranges can be held in storage on the tree after they are fully ripe until market conditions are most propitious for their sale is outstanding. Latterly, the writer inspected trees in the Chinaman's grove which bore oranges that were from one to four years old and still delicious and edible. There is no other species of orange produced in the world today that will hang on the tree for long periods without deteriorating.

In his grove near DeLand, Florida, Lue Gim Gong treasures the parent orange tree which gave rise to the new variety. Scientists and citrus growers by the thousands from all parts of creation have visited the queer old Chinaman and marveled at his plant polenization experiments. Just think of an orange tree that at present bears four generations of fruit. The blossoms of the current year, fragrant with the delicious odor of the orange bloom, shortly will mature another crop of fruit. The longer the oranges hang on the trees, the larger they become and the darker in color. The four year old veterans are as large as small grapefruit.

Lue Gim Gong is also the developer of a remarkable perfumed grapefruit, the like of which has never previously been grown. Pluck one of these extraordinary fruits, remove it to your dining-room table and shortly it will perfume your entire house.

Horticulturists say that the pleasant odor comes from curious cells in the skin of the fruit which secrete and exude a highly perfumed oil. How the Chinaman ever was able to breed this peculiar property into the grapefruit is a secret which has evaded the search of research. The perfumed grapefruit is the progeny of a cross of the pomegranate on the ordinary grapefruit with much oriental magic injected into the union.

THE Lue Gim Gong grapefruit —another citrus celebrity brought into being by the bantamweight Chinaman—is a heavy yielder and is qualified to withstand much lower temperatures than can the general run of citrus products. This particular grapefruit can successfully resist temperatures fifteen degrees lower than those which freeze the varieties that are commonplace in both Florida and (*turn to page 63*)

Lue Gim Gong has developed a grapefruit that will withstand temperatures 15 degrees lower than that which freezes the ordinary grapefruit.

Experiment on Cotton Rust by E. L. Jenkins, Midland, Ga.
Incomplete Fertilizer (without potash)—Yield: 656 lbs. seed cotton per acre.

Helpful facts for checking this common disease.

COTTON RUST

ONE of the common diseases of the cotton plant is generally known as rust, and due to the fact that it is often caused by a lack of available potash in the soil it is sometimes referred to as potash hunger. This disease is widely distributed and, at times, may become of such a serious nature, especially upon poor and light soils, as to be the chief cause of unprofitable yields.

The fact that losses from cotton rust "range from slight to as much as 50 or 60 per cent, with an estimated average for the entire cotton belt of 4 to 5 per cent," should be a matter of grave concern to farmers in those sections where this malady is prevalent.

Reports show that more than a half a century ago rust was recognized by cotton planters to be of sufficient importance as to justify the employment of control measures. In the Annual Report of the United States Commissioner of Agriculture, Honorable Isaac Newton, for the year 1866, we find the following reference: "Rust is generally the worst in soils of moderate depth, which have been planted in cotton for a number of successive years. Rotation of crops and a liberal application of manures, especially those that are rich in potash and phosphoric acid, will, in nine cases out of ten, relieve the cotton field of this malady."

Although cotton rust was long

Experiment on Cotton Rust by E. L. Jenkins, Midland, Ga.
Complete Fertilizer (containing 50 lbs. Muriate of Potash per acre)
Yield: 1,000 lbs. seed cotton per acre.

and its Control

By John S. Carroll

recognized by practical occurrence, very little was known concerning its cause until 1889, at which time Dr. George F. Atkinson, Biologist of the Alabama Experiment Station, began a pathological study of this disease. Since the publication of the early results of his investigations, showing the value of Kainit in checking cotton rust, further experiments have been carried out by the agricultural experiment stations with the result that Sulfate of Potash, Muriate of Potash, and Kainit seem to be equally effective in proportion to the per cent of potash contained.

Our present knowledge of cotton rust and the best known methods of controlling this disease are clearly set forth by W. W. Gilbert, Pathologist, Office of Cotton, Truck and Forage Crop Disease Investigations, Bureau of Plant Industry, United States Department of Agriculture in Farmer's Bulletin 1187 on "Cotton Diseases and Their Control" as follows:

"Occurrence and Losses"

"One of the most common and serious troubles affecting cotton on the poorer soils throughout the cotton belt is generally known as rust. Other names are black rust, yellow leaf-blight, and potash hunger. It occurs quite generally on the worn-out and light sandy soils, and in the aggregate the losses are large. (*turn to page 65*)

¶Helpful advice on one of our biggest problems.

GIVE THEM *an*

An exclusive interview with

Howard M. *Gore*

Assistant Secretary of Agriculture

"WHAT can we do to make agriculture more attractive to our young people?" In one form or another I constantly hear this question being asked.

Knowing that the Assistant Secretary of Agriculture, Howard M. Gore, is intensely interested in this very problem, I took occasion to discuss it with him on a recent trip to Washington. Hardly a day passes that he does not receive some word or token of appreciation from an ambitious member of a boys' or girls' club in whom he has inspired a desire to master the intricacies of modern farming. Talking to or about boys and girls active in club work is, I verily believe, Howard Gore's greatest pleasure. And he has spent a great deal of time doing both.

"Pride of ownership and the desire for individual responsibility and initiative, properly directed, are largely responsible for the interest

¶Here is an ambitious member of a boys' club preparing his calf for a prize exhibition. Thousands of boys and girls all over the country are learning the value of pure-bred cattle and how to breed them and care for them. They are studying under the greatest teacher there is—Experience.

Early START!

By Jeff McDermid

and success of club work today," said the Assistant Secretary. "Nothing impels a young lad on the farm to greater things than the fact that the ownership of a calf or pig is placed entirely in his hands and that his success in competition with the boy across the road depends largely on the care and feeding he gives his charge. And the same is true of the ittle girl who takes part in poultry, cooking or other phases of club work. It is only human nature that the very thought of competition among individuals will bring out the best effort. The spirit of competition among club members and the success or failure attached thereto is the same that governs failure or success in farming. And the experience gained in youth, as we all know, is lasting and valuable in the years to come."

AT this point, the Assistant Secretary produced figures to show

These four farm girls were sent to the Interstate Fair in Sioux City, Iowa, last year, to give a demonstration in meal preparation and serving. Over 36,000 meals were prepared last year by club girls learning by practice the best known methods of carrying on home and home making enterprises, under the direction of cooperative extension workers.

the extent of club work. "During the fiscal year, 1923, the Department of Agriculture finds that 28,200 clubs made up of 600,957 boys and girls engaged in demonstration work in agriculture and home economics, an increase of about 12 per cent over the previous year," he said. "The estimated total value of club products was $8,650,000. The largest enrollment was in connection with the work on clothing which consisted of 123,000 boys and girls, of whom 78,600 completed their work and made nearly 300,000 garments. Next in importance was the enrollment in poultry clubs, which was approximately 80,000. These young people handled 940,000 birds that produced 1,357,000 dozen eggs. This is only an indication of the extent of club work the past year. Other examples could be cited to show what these young folks are doing with approved methods recommended by the Department and the state agricultural colleges.

"Of the over one-half million boys and girls active in club work naturally only a comparatively small number are awarded highest honors." he continued. "Records show, however, that a large number of them keep at it from year to year, ever bearing in mind that success comes only to him who works honestly and consistently. They exhibit that same determination which accounts for ultimate success and the same dogged spirit which has enabled the American farmer to survive three of the most severe years in history.

"The successful calf or pig club boy of today will be the successful farmer of tomorrow and the successful girl club worker will be the happy homemaker. These young people are learning the rewards of hard work and endeavor. They know what it is to meet with success or failure in honest competition and they are taught to accept either gracefully. In this respect they are setting an *(turn to page 71)*

Herbert Willer of Woodbury County, Iowa, began his club work with feeding and caring for a Shorthorn calf. This calf gained under his management 625 pounds in 9½ months, making the owner a profit of $7.17 per hundred pounds gained. Herbert next bought a purebred Hampshire sow, about four years ago, and is building up a show herd. He has exhibited both Shorthorns and Hampshires with success, winning first for Hampshire gilt in the junior classes at Sioux City, Iowa, Interstate Fair, 1923. Herbert and his father now own together over 200 head of purebred Hampshire hogs.

The Cooperative Idea

Part One

By Charles J. Brand

Consulting Specialist in Marketing, U. S. Department of Agriculture

The interest aroused by Mr. Brand's articles on cooperation in the November, December and January issues of Better Crops *was so great that we persuaded him to give us more on the same subject. There are few men in the country who know this subject as well as Mr. Brand.*

NOT long ago when talking with Ex-Premier Luzzati, of Italy, he referred to Germany as the cradle of cooperation. As a matter of fact, it appears that Switzerland was the scene of the first recorded cooperative enterprise. There cheese producers joined together and by turns each sold the product of all. Later, the ablest trader in the group devoted himself exclusively to selling, leaving the producing field altogether. He thus, as a matter of fact, appears to have evolved into a middleman.

All this occurred some hundreds of years ago and has no particularly great meaning to cooperation in its modern sense. In modern forms of cooperative enterprise the Germans were, and still are, the undoubted leaders. Some one has said that in organization the Germans have no superiors, in psychology no inferiors. Without challenging the latter, the former is generally admitted.

The great American Commission sent to Europe in 1913, composed of many of America's ablest agricultural leaders, brought home from there a vast amount of information that was of great value in promoting renewed cooperative effort in America in the recent period of greatest development.

There were sporadic and isolated attempts at cooperation in carrying on business activities from the earliest days of the Republic. Many farmers' associations were organized but their purposes were educational and for mutual improvement. In 1810, however, a dairy enterprise, based on cooperative principles, was started at Goshen, Connecticut. It was short lived.

WITH the recent high tide of cooperation in public favor several contenders for early honors have come to light. In 1841, a Wisconsin farmer made cheese from his own and a few neighbors' milk. The products were sold together and the proceeds were divided ratably. From this time on, here

and there without reference to each other, small cooperative dairy enterprises sprang up in various parts of the country. Their aggregate number was small, perhaps not over a dozen or two up to the end of the Civil War. Only one of these early efforts, so far as is known, proved permanent and is in operation today. This is a cooperative creamery at Fonda, New York, which was started in 1863 and still carries on successfully.

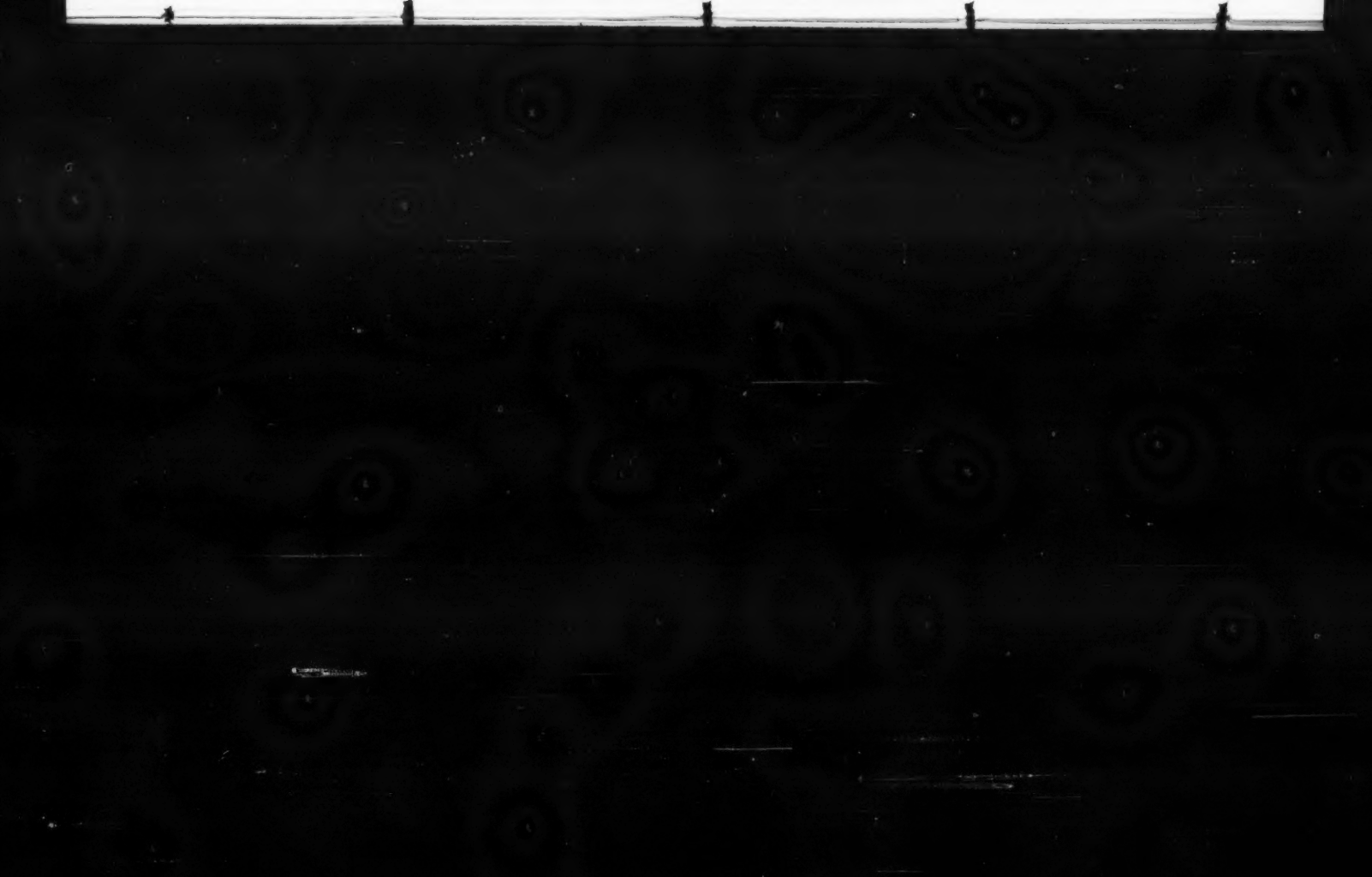
Creameries and cheese factories predominated among the first attempts at agricultural cooperation. They lend themselves well to this way of doing business. Dairy farmers also came from countries or are descended from nationalities whose historical development tends somewhat less to individualism and more toward common effort. The small quantity of product on the average from each farm also calls for some method of pooling the raw material for the manufacture of the finished product and its sale.

DURING this same period consumers' cooperation of various kinds waxed and waned at different times. Stores were opened in several cities, notably Philadelphia and Cincinnati. They flourished for a brief time and then passed on. In 1825 Robert Owen, the father of modern collectivism whose genius and spirit later fired the 28 pioneers in consumers' cooperation at Rochdale, near Manchester, to carry to a successful conclusion their great experiment, came to America and organized his cooperative colony at New Harmony, Indiana. Owen was a great industrialist in England, a large employer of labor, and, while regarded as visionary, was nevertheless a man of very high standing.

At about the same time Moravian and other immigrants from Germany came to America and started similar colonies. Such were the ones at Freedom and Harmony, near Pittsburgh, Pennsylvania. Owen's experiments included the one at New Lanark, Scotland (1813), the one at New Harmony (1825), Ralaline, Ireland (1830-33), and the one at Queens Wood, Hampshire, which began in 1839 and went out of existence in 1844.

ALL of these were really experiments in cooperative production and communistic ownership. Alongside these, which were usually called "Utopias," cooperative stores and workshops grew up in large numbers. By about 1830 there were in England 266 cooperative societies, with 16 stores in Manchester alone.

Between 1830 and 1844, the movement had gradually expired. In the latter year 28 poor flannel weavers, who had just lost out in a strike undertaken to improve the wretched lot that then prevailed in their trade, decided that a cooperative store would benefit themselves and their fellow workers in solving their cost of living problems and enable them to attain a decent standard. They called their organization "The Rochdale Equitable Pioneers' Society." Their capital was very small, one pound sterling each, a total of 28 pounds, about $135.00. This was accumulated by saving two pence or about four cents a week, and putting it in the common treasury. The first weeks' sales of a few staples like flour, butter, and sugar handled amounted to about $10.00. This contemptuously and derisively treated fragment of business (*turn to page 62*)



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Not Asia nor the Levant but our United States near Berino, N. M. These sheep are Rambouillets and Karakuls, raised for fine Araby furs as well as for meat.

© U. S. D. A.

Palmer and Iver Eide of Baltic, Minnehaha County, South Dakota, The average yield of corn per acre in their county has not been higher than 37 bushels but, under the direction of the county agent, last year they made 130 bushels on their two-acre club plat.

© F. Dickie

A rare bird! A white crow now captive in the Vancouver, B. C., Zoo. It is pure white except wing tips and beak. Ordinary crows always set upon such freaks and try to kill them.

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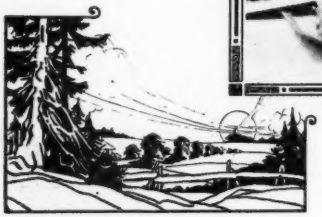
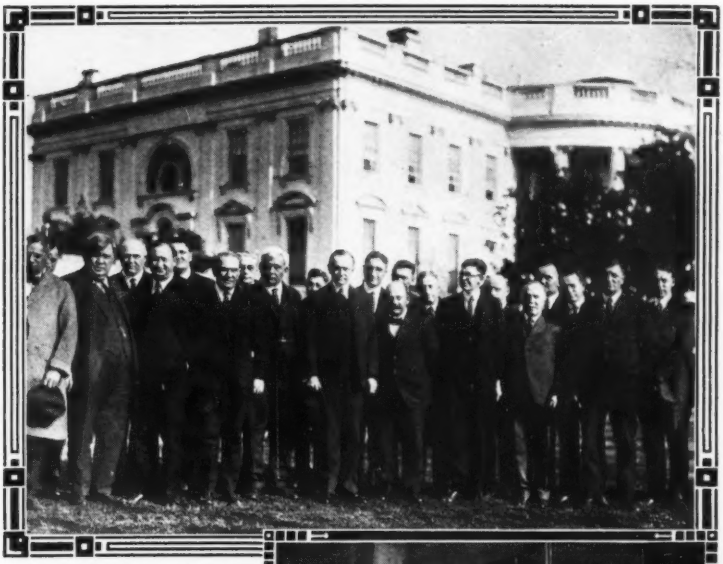
The only woman cotton broker, Miss May A. Davis of Philadelphia.





© International

Farmers from the Northwest in company of members of House Agricultural Committee calling on President Coolidge. These delegates came to urge Congress to pass the Farm Loan Bill.

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At the National Cooperative Marketing Conference in Washington last month. Left is Frank O. Lowden, former Governor of Illinois, one of the speakers, and Robert W. Bingham of Louisville, Ky., chairman of the council.

Dean C. B. Williams, Chief of the Division of Agronomy of the North Carolina State College of Agriculture and former Director of the North Carolina Experiment Station. His life has been devoted mainly to helping solve some of the more important problems connected with farming such as increasing the income and bettering the conditions of Southern farmers.

Making a More Prosperous FARM Community

Dean Williams presents some interesting thoughts on a subject that is in everyone's mind.

By Dean C. B. Williams
North Carolina Agricultural Experiment Station

IN a purely rural community there can hardly be a shadow of doubt that the first and most important factor in the development of the farm home and the rural church, as well as in the betterment of the schools and health conditions, is that of making farming a better paying occupation. To do this, it is obviously necessary to increase the acreage production at a minimum cost, and at the same time, secure at least reasonably fair returns from the crops produced. Poor homes, inadequate church and school facilities are more prevalent that we should like to see them in the South, and elsewhere throughout the country, mainly because so many farms are producing so poorly and thereby yielding such small net returns for the efforts put in their operation.

During the past few years, in visits to different sections of the South, we have been forcibly struck with the marked correlation which exists between the productiveness of the soil on the one hand; and the excellent character of the farm homes and their surroundings, the splendid schools and churches, the healthfulness of the families, and the educational qualifications of the people on the other. In close proximity to such areas, it is not uncommon to find other less productive areas, sparsely settled, where the people are living in humble homes without beautification and their children are without opportunity to benefit by the social, religious and educational advantages enjoyed by those communities established on the more productive lands. The underlying conditions largely responsible for these differences are not hard to find. My observations are, that to a large extent it is fundamentally connected with the differences in the productiveness (*turn to page 50*)

The Attitude of the American Bankers Association *on* COOPERATIVE

COOPERATIVE endeavor is as old as history itself and the wisest teachers of the race have taught that the test of civilization is the ability to exercise intelligent cooperation in the solution of public problems.

While cooperative marketing of farm products as a general proposition is a comparatively new venture in our country, nevertheless a sufficient fund of successful experience has already been developed in certain commodities, to establish a few basic principles of procedure. More and more, cooperative marketing when sanely applied is being regarded as a sound, logical, economic development.

EVEN as order is said to be Heaven's first law, so in time orderly marketing may prove to be agriculture's primary law. At any rate, the orderly marketing idea has taken firm hold on the public mind and there is a widespread feeling among consumers as well as producers that it promises the elimination of much needless waste and expense, and that appreciable benefits will accrue to both producer and consumer.

It seems to me, however, that it will be unfortunate for the farmer if he becomes imbued with the idea that cooperative marketing in itself is a panacea for all agricultural ills. For whatever the merits of cooperative marketing, it is wise to bear in mind that it has definite limitations. A well organized, wisely managed, cooperative association can be most helpful and can accomplish much that might otherwise be impossible in solving marketing problems—it may prevent untimely dumping of products, it may secure better credit facilities, it may extend existing markets, it may even create new markets as a Pacific Coast enterprise has successfully demonstrated in selling its fruit in a new Eastern market—but obviously it cannot accomplish the impossible; for its operations will be as amenable to economic law as those of other business enterprises. Cooperative marketing cannot prevent other countries with cheaper land and labor from producing a surplus and selling it in foreign marts at a price unattractive to us. It cannot

¶When Mr. Simmonds delivered this talk before the National Council of Farmers' Cooperative Marketing Associations at Washington, D. C., last month, it created unusual interest. Mr. Simmonds has courteously given us permission to print it for the benefit of our readers who were not at the conference.

MARKETING

By Frank W. Simmonds

Deputy Manager, American Bankers Association

successfully over-ride the law of supply and demand or maintain for any length of time an artificially high price by unduly withholding from market a product when there is a demand for it, or by any fiat of law or ironclad rule unduly limit production. Sane orderly marketing must be accompanied by sane orderly thinking.

Denmark is frequently cited as a successful time-tested example of what cooperative marketing will do for agriculture. However, there is a phase of the Danish plan that is not sufficiently emphasized: where we stress cooperative marketing, the Dane stresses cooperative agriculture. With us, so far, cooperative marketing is chiefly a marketing proposition, with them marketing is only the final element in a long series of steps in the cooperative enterprise. With them marketing is stressed only about 10%, while 90% of the cooperative effort is devoted to a careful scientific study and solution of factors preceding the marketing stage; such as, soil chemistry, cultivation, breeds of live stock, cost of product, accurate records, improving and standardizing grades of products, producing and packing a product suitable for the market catered to. They feel that when these questions are solved marketing becomes a comparatively simple problem.

Moreover, in Denmark, cooperative marketing is on a competitive basis between various cooperative associations. For instance, there are 46 baking factories selling on a competitive basis with each other. Similarly, this is true of bacon factories, cheese factories, butter factories, etc.

It seems to me we may wisely take a leaf from the Danish notebook of experience, and emphasize more than we have done, the vital factors in cooperative agriculture preceding cooperative marketing—that of efficient, economical, maximum production of standard grade products, for however important cooperative marketing may be in solving the exigencies of the present time, cooperative marketing is only one link in the chain of agricultural problems, and alone it will not offer a sufficiently broad program for permanent, profitable agriculture.

A great deal of interest is being manifested in the cooperative marketing attitude of the American Bankers Association. The bankers have a vital concern in agricultural problems and agricultural prosperity, and they have a sympathetic attitude toward orderly marketing of farm products; also the cooperative enterprises dealing with the problem preceding the marketing step.

BANKERS are using every means at their command to fully inform themselves so that they may act

intelligently and cooperate helpfully—for they fully realize that the banker and farmer are partners in prosperity and in adversity at all time and under all circumstances.

THE Agricultural Commission of the Association for many years, at a large expenditure of effort, time and money, has been performing a wonderfully helpful work in bringing together farmers, bankers, and representatives of agricultural colleges in the various sections of the country for frank conferences and the working out of a definite program of cooperation between bankers and farmers, with special attention to the problem of diversified farming and stimulation of boy and girl club work. In order that there may be no misunderstanding as to the position of the American Bankers Association, I shall take the liberty of quoting the resolution of the Association adopted September, 1922.

"We are glad to note a steady improvement in the condition of the farmer, and we congratulate the agricultural community upon having organizations generally led by men who are showing marked breadth of vision and soundness of judgment in respect to the problems confronting this most important of our industries.

"We can assure the farmers and livestock producers of the country that the bankers will continue to lend them their best aid in the solution of their manifold problems, which solution should be sought through private enterprise and not through government aid. We, therefore, approve of the various endeavors being made by the farmers themselves to increase the facilities for the orderly marketing of their products."

Moreover, the State Bank Division of the Association, with a membership of over 12,000 banks most closely identified with farming and agricultural interests, has been devoting a great deal of attention to the problem of cooperative marketing, and at the Annual Meeting, September, 1923, stated its position in the following resolution.

"Resolved, That we reaffirm our faith in the wisdom of orderly marketing of crops and in the efficacy of the cooperative marketing idea; provided, however, that organizations employing this idea are conducted on sound economic principles.

"We believe that the ultimate success of any such organization will be great or small, depending upon the sound business judgment of the men who control its affairs and the complete divorce of any element of speculation."

THE Public Service Committee of the State Bank Division has confined its work during the past year almost exclusively to a careful study of cooperative marketing and related problems. For the purpose of obtaining first-hand information upon which to base logical deductions, a questionnaire on the subject was sent to the 12,000 member state banks, including a majority of banks in rural communities, also secretaries of State Banking associations and State Commissioners of Banking.

The consensus of replies received is presented in the following conclusions by the Committee.

1. The farmer has gone through several very difficult years which have impressed upon him the absolute necessity for the elimination of all wasteful and uneconomic practices, and have convinced him that only constructive effort and real cooperation can help to solve his problems.

2. The organization of cooperative associations rests on sound economic principles, to which even the most conservative bankers may conscientiously subscribe, but their ultimate success will be great or small depending upon proper organization and the sound judgment of the men who manage their affairs.

3. This new economic development points the way to a permanent solution of the whole problem o financing the production and marketing of our principal farm products, and will, if successful, result in great benefit for the farmer, will bring about a more even distribution of business activity, (*turn to page 46*)

Three Ideals

By Dr. Frank Crane

THERE are three words which seem to express the three types of civilization which the world so far has worked out. ¶They are Enjoyment, Contentment and Achievement. ¶We might say that the ideal of life in Europe is Enjoyment, in the Orient Contentment, and in America Achievement. ¶Of course there are infinite exceptions to this, but as broad generalities they may hold. ¶The European who works looks forward to the time when he shall have laid up enough money to enable him to quit work and devote himself to enjoyment. ¶He is still more fortunate, or so both he and his fellows deem him, if he does not have to work at all, but can live on the money that his father or his grandfather left him. ¶So ingrained is this in the European mind that a man can hardly be called a noble so long as he has to make his own living. ¶The corollary of this is that work is a misfortune, that the great masses of people who have to work are out of luck, and that only those people work who are so unfortunate or so stupid that they are not able to live upon the labors of others. ¶Most of the literature that comes out of Europe treats of the lives of idlers, of those who devote themselves to sports or to the artificial amusements of what is known as society. ¶This explains why Socialism is so strong in European countries. As a theory it is illogical, but the real force of it is a protest against idleness as an ideal. ¶In the Orient the ideal is Contentment. Buddhism, the prevalent Eastern religion, emphasises this virtue. The great toiling masses live in conditions of unspeakable poverty, yet in the main are cheerful and contented. ¶This makes plain in a measure "the lure of the East." ¶For a person coming out of the turbulent conditions of life in the West and finding in China a vast population that is docile and peaceful, there is a certain charm, especially when he can live in luxury and keep many servants at little expense. All of us love to be coddled, and when we can have a whole nation coddle us quite as a matter of course the sensation is appealing. ¶In America we find neither Contentment nor Enjoyment as ideals. The mainspring of every American is Achievement. He thinks he is born to do something and he is not happy unless he is doing it. ¶That class of Americans who imitate the Europeans and spend their time in sports, amusements and social dawdling, are regarded by the general public with more or less contempt. It is not fashionable in America to do nothing. ¶The American finds his enjoyment in his work, not after it. ¶The American is proud of making his own money, and is a little bit ashamed if he is living on money that someone else has made. ¶An American could not be contented with the content of the Orient. He has born in him a divine discontent, urging him to achievement. This discontent may make him in a measure uncomfortable. But it would make him infinitely more uncomfortable if he did not have it. ¶The future war of ideals in the world will be between these three contestants, Enjoyment, Contentment and Achievement. ¶It wili be interesting to see which will win.

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Two Bouquets *of* Clover

¶This demonstration surprised everybody

TWO bouquets of clover solved a problem in fertility, but it took three years, a county agent, a soils and crops specialist, two farmers in trouble and a sack of potash to produce the bouquets.

We don't usually speak of bouquets of clover, but in this particular case it is grammatically, theoretically and scientifically correct. To introduce the characters, we must look to the farmers in trouble first. It often requires trouble to get us down to the place where we will think, plan and finally work things out.

In 1919 many of the farmers of Whatcom county, Washington, began to lay siege on the office of Harry B. Carroll, Jr., county agent, asking why they couldn't secure a second year's growth of clover. This was not a new question to the farmers but, as year after year passed, it became a more serious problem.

Whatcom county is one of the leading dairy sections of the state,

Clover and timothy without potash. Grass approximately 12 inches high (first cutting). Clover very scarce.

Solve a *Problem*

By *Lincoln* R. *Lounsbury*
Washington State College Agricultural Extension Service

and clover constitutes an important feed for the cows. If the farmers were to continue in the dairying business, they had to get two year's stand of clover. Now all problems have queer turns, and there was a kink in this hay stack.

On some of the farms of the county good clover could be secured for two years, while on others, not far away, the farmer would wait for his second crop to develop and find he had none. Like all good stories we have to introduce our third character, the soils and crops specialist.

A CONFERENCE took place between the county agent, the troubled farmer, D. Vander Griend of Lynden and Leonard Hegnauer, extension specialist of the State College of Washington. Unlike a good many so-called "conferences" this one produced results. Potash was taken into consideration and the four main principals of our story were set to work. (*turn to page* 57)

Clover and timothy on which 100 per cent of potash was applied per acre. First cutting—30 inches tall on average. Field exceptionally uniform and clover abundant.

¶The second (and concluding) installment of the perils encountered by employees of the Department of Agriculture.

Dangerous Agriculture

Part Two

By C. E. Gapen
with U. S. Department of Agriculture

THERE are persons who are firmly convinced that the scientists who fuss with insects take the biggest chances. But the entomologist gets into this story only because I wish to explode a popular fallacy. According to Dr. L. O. Howard, chief of the Bureau of Entomology and one of the best known entomologists of the world. there are no deadly insects in this country, if we exclude those which sometimes carry dangerous diseases. With the elimination of yellow fever the mosquito which carried this deadly disease is no longer a menace. Department men have braved the dangers of many insects of this type as they did in the West some years ago when they helped in the study of spotted fever, a disease carried by ticks which live on ground squirrels. A State man in Montana and a doctor in the U. S. Public Health Service lost their lives through the bites of these little insects.

But scorpions, tarantulas, centipedes? Pooh! Their reputation is worse, much worse, than their execution. They produce pain and sometimes make their victims very sick, but the entomologist does not consider them dangerous. However, he watches them as he would a horse with flattened ears. They are not agreeable companions.

What is the most dangerous insect, not counting the disease carriers? It is a little spider with names which might be applied to a golf ball—the "black widow" or the "red dot." It is found mostly in the southern States and its bite on a thin membrane, such as on the lip or between the fingers, may put a man on his back for several days. Many of the stories of death-dealing insects are exaggerations. A few years ago it was flashed over the world that a famous French entomologist working in Algeria had been eaten by grasshoppers, only a few bones and a remnant of a red necktie being left of him. Long after his obituary had been read before a scientific society he was eating snails and frogs in Paris. The grasshopper sometimes looms large, but there are no authentic cases of his having become a man-eater.

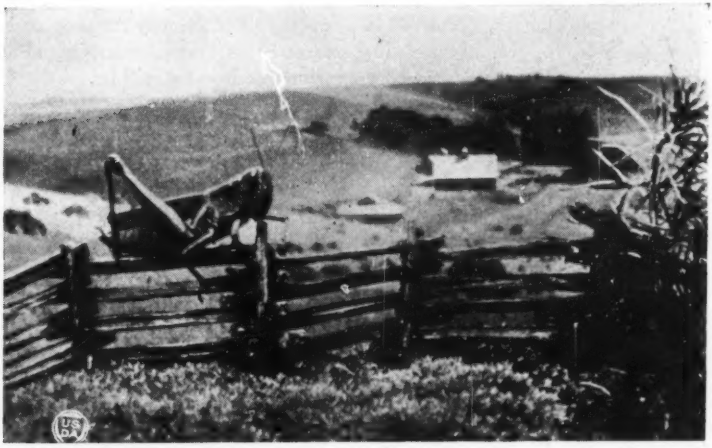
THE plant explorers are, perhaps, the greatest adventurers among the agricultural workers employed by Uncle Sam. They

comb out-of-the-way corners of the world for new and valuable plants they may add to our comfort or pleasure and they take life as it happens to be in the jungle or on the desert. In the last 25 years 25 of these hunters of vegetables, fruits, nuts and flowers have been in the employ of the Department, and now there are three on the job, one of them searching the jungles of southeastern Asia. One of his reports contains an account of his cooperation with the natives of a Burmese village in trapping a man-eating tiger. In his travels through these dangerous areas he is accompanied by soldiers whose wages he pays. Another plant explorer years before was badly beaten by Chinese bandits and later lost his life in a river of China.

One of the men engaged in the foreign seed and plant introduction work has spent much time in Central and South America. To see him in his quiet office at the Department of Agriculture you would never guess that his job had brought him many times the average man's measure of adventure. But this explorer, Wilson Popenoe, has been shot at from ambush several times by unduly suspicious natives; he has been robbed four or five times in lonely roads, and he has been arrested and jailed seven times on various trumped up charges, including those of being a spy, a robber, and a revolutionist. In one town where he lived for a time the natives were dying of yellow fever; he came nearly going to the bottom of the Caribbean when a banana boat was caught in a bad storm.

Sickness and bad food are the greatest dangers encountered by these explorers; fleas, lice, flies and mosquitoes welcome the foreign scientists. One man reported 159 flea bites on his forearms after a night spent in a hammock in a Guatemalan country house. It may well be imagined that the plant explorer in such regions must have plenty of physical hardihood as well as an instinct for recognizing plants giving promise of usefulness.

Government hunters of predatory animals in the West get rather small pay, but they get (*turn to page 49*)



The grasshopper looks this large to farmers in some localities, but he is no maneater!

A Modern Doll That Really Works

¶An important discovery now made known to the public

By Albert A. Hansen

Purdue University Agricultural Experiment Station

IF you were a banker or a business man, would you take a single unnecessary chance with something worth nearly two billions of dollars? If you had sense enough to guide the destinies of so large a sum you probably wouldn't, but that is exactly what the American farmer does when he plants seed corn from untested ears.

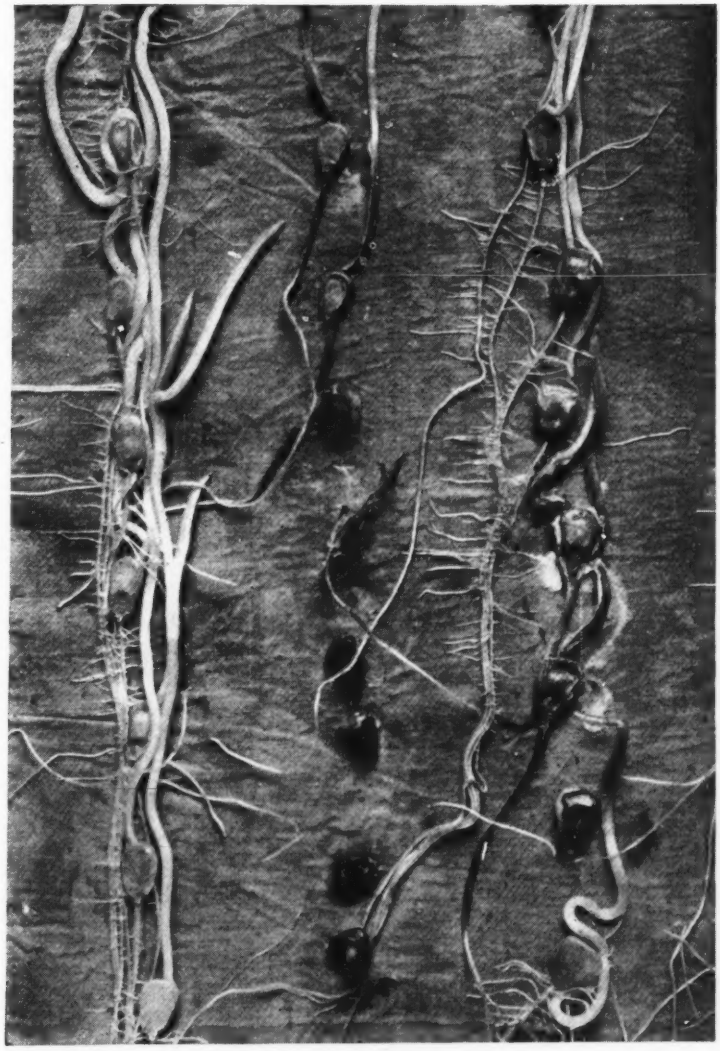
It used to be that about all the farmer could do to insure good seed corn was to test it for germination, but recent improvements have changed all this. Nowadays it is possible to get advance information regarding your seed corn on three important factors—germination, vitality and freedom from disease. This has been made possible by the development of the modified rag doll, a product of the corn disease investigations that are being carried on at the Purdue University Agricultural Experiment Station in partnership with the Office of Cereal Investigations, Washington, D. C.

Both the theory and the practice are quite simple. No matter how choice an ear of seed corn may appear to the naked eye, any kernel on the ear may harbor root rot and other ruinous diseases that sap the vitality of the offspring and may cut down yields materially. Not only that, but even sturdy appearing ears may develop puny plants in spite of the fact that no disease may be apparent. In other words, the parent ear must have both vitality and a clean bill of health in order to produce vigorous offspring, something that cannot be discerned by merely looking at the seed. The modified rag doll, however, points the way for progressive farmers to learn something about what the harvest will be.

HERE is how the process works. The seed corn is selected in the field and stored on racks. A few kernels from each ear are then placed on the rag side of a specially constructed doll made up of a piece of cloth and a sheet of glazed paper of similar size and shape. The doll is then rolled, placed in a germinator box for a few days and unrolled. The germinated seeds tell the story, because the seeds from some ears will usually produce

weak or diseased sprouts in contrast to the vigorous, healthy offspring of good ears. The detection of diseased ears is not possible with the old type rag doll where a single infected kernel may contaminate the entire doll. All this is prevented by the heavy glazed fibre paper used by the Purdue investigators.

Perhaps all this sounds a bit theoretical. Very well, let's see how the scheme (*turn to page 44*)



The story told by the modified rag doll. To the left is the progeny of a good ear while the other two rows represent weak and diseased ears. Only the ear from which the kernels to the left were taken should be used for seed.

Jeffisms

Many securities nowadays are *guilt*-edged.

The world owes you a living—but you must write your own collection letters.

When you say a man is light-fingered you should explain whether he is a pianist or a pickpocket.

A horseshoe is an emblem of luck for but one man — the smith who forges it with his good right arm, sells it, and totes the proceeds home to his family.

No pruning; no prunes; no cultivating, no cabbages, no backache, no bank account.

Men seldom act through intelligence — they act, then seek an intelligent reason to justify their actions.

Duty is less interesting than either Rights or Privileges.

Jeff

Rate of Yield Decides Your Profit

Most farmers figure their production on an acre basis, that is, so many bushels of corn or potatoes, so many tons of hay, so many bales of cotton, per acre. Some are apt to lose sight of the fact however, that in selling the crop, that basis doesn't actually hold good. Corn is not sold by the acre; neither is hay. They are sold by the bushel and ton. So it is that often a man figures his costs on the acre basis when as a matter of fact the acre cost may have little or nothing to do with the profit on the crop. Let us explain, first,—

With an instance provided by Mr. John Shutt and his son, of Garrett, Indiana, who grew potatoes on adjoining land last summer. The father used ordinary seed, 17 loads of manure and no fertilizer. The son used certified seed, green-sprouted, the same amount of manure and 475 pounds of a 4-8-6 fertilizer. Mr. Shutt got 75 bushels of potatoes per acre at a cost of about $1.13 a bushel. John got 227.6 bushels at a cost of 36c a bushel. Suppose the market had been one dollar. The father would have had to lose 13c on each bushel, while his son was making 64c on each of his bushels.

Another instance, also with potatoes, is furnished with the record established by J. S. Wile, Souderton, Penna., who has recently been accorded the championship among potato growers of that State. Mr. Wile produced 2,630 bushels on 5.9 acres, an average of 445.8 bushels per acre. On his best acre, he grew 532.4 bushels. His average cost of production on the 5.9 acres was 27.2 cents a bushel, while on his best acre, the cost was 22.8 cents per bushel. Thus after attaining a rather abnormal rate of yield—445.8 bushels per acre—Mr. Wile, still further increasing the rate by 86.6 bushels,—reduced his production costs by 4.4 per bushel.

Thus, the difficulties connected with figuring costs in an acre basis seem apparent especially when it is remembered that the crop must be sold on a bushel (*turn to page 38*)

North Carolina's *Agricultural* Progress

By F. H. Jeter

North Carolina Agricultural Extension Service

IRVIN COBB said in Hearst's International Magazine for November, I believe, that all North Carolina needed was a press agent—she had everything else. Now, I don't like to be known as a press agent nor would it be good taste in one among the ranks to attempt that role but some folks in the South have been good enough to point to my adopted State as one worthy of emulation.

North Carolina has progressed. When the State voted $50,000,000 of money for building a system of good roads from county seat to county seat, and followed this with another appropriation for $15,000,000 at the next meeting of the legislature, the surrounding country began to sit up and take notice Then, when price declines hit the farmer in the fall of 1921 and cotton crops failed to pay for the fertilizer used under them, North Carolina by virtue of being a diversified state and because this $50,000,000 was being spent freely over all parts of the State, was not hurt so badly, this passing notice changed to admiration.

LAST year, North Carolina produced 1,020,000 bales of cotton with a value of about $159,548,400 basing the price on 33 cents per pound which was the prevailing average for the greater part of December. This makes North

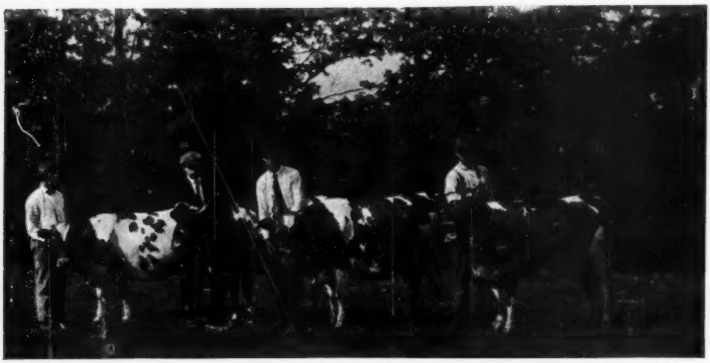
Picking cotton in Cleveland County, North Carolina.

Carolina for the first time in her history, second in both production and value of cotton with only Texas first. Not with cotton alone have the farmers made money, however. Tobacco has been a good money crop this year and so have peanuts and in the belts where these three crops have been grown, the farmers have enjoyed a great agricultural year.

HOW has this come about? Is North Carolina going through a boom condition? Emphatically, no! Point, if you will, to the fact that the State is increasing its appropriations to its University and State College, that it is supporting liberally its Board of Health, its Department of Public Welfare, that it recognizes the negroes as an important part of its citizenship and provides for them educationally and otherwise, that it is enlarging and expanding all of its public institutions to take care of the demands being made on them and that business feels the new impetus in North Carolina and is carrying on courageously. I say, point to these if you will as an indication of boom conditions and still must I say that there is no boom. What then? Back of it all, the farmer.

For about a quarter of a century, North Carolina has had a definite agricultural program. The State has seven experimental stations located on the main soil types and sections of the State, in addition to the large central farm at the State College. The investigational work has been combined with the extension work under one director, so that *in fact* the extension workers have had the opportunity of carrying to the people the findings determined by the investigating scientists.

IT is well known that North Carolina is blest by having a varied soil and climate extending as it does from the highest point in the Appalachian highlands to the low areas of the coast. Therefore the agricultural workers have taken advantage of this condition and have for years preached better farming and showed the wisdom of a diversified agriculture adapted to these conditions. I believe the Census would show that this State now has a more diversified agriculture than any other State in the South. Just a brief statement would suffice to show that this is true. In the mountains there are buckwheat, sugar (*turn to page 48*)



Two up-and-coming North Carolina County Agents inspecting livestock. County Agent W. G. Yeager of Rowan County at extreme left; County Agent R. D. Goodman of Cabarrus County is third from left.

¶Here is a suggestion you may find very valuable.

CORN *Responds to* Potash *Fertilizers*

By H. R. *Smalley*

Soil Improvement Committee, National Fertilizer Association
formerly of Indiana Agricultural Experiment Station

WITH potash again plentiful and at pre-war prices the farmer may well consider carefully the amount of potash that he can profitably use in his fertilizer and the crops to which it can most effectively be applied.

THE war-time shortage of potash did much to convince farmers of its effectiveness in increasing the yield and improving the quality of crops. Besides, experiments conducted in the past few years have shown that potash is needed on many silt loam or so-called "clay" soils, whereas formerly most soil specialists were of the opinion that only peat or muck and sandy soils were deficient in potash. In fact, a careful study of a large number of experiments on the heavier types of soil show that there is little, if any, relation between the amount of total potash in such soils and their need for available potash. In addition to experimental evidence the actual experience of farmers is becoming more and more valuable in establishing correct fertilizer usage.

During the past few years the practice of recommending acid phosphate for corn and complete fertilizer for wheat or other cash crops has become rather common with those who are in a position to advise the farmer in regard to the use of fertilizer. This has no doubt been due in part to the high prices of potash during the late war and also to the fact that manure is so generally used on corn. The weakness of such a recommendation is two fold. In the first place there is considerable evidence to show that corn responds to potash to a more marked degree than does wheat, and secondly, the total quantity of manure produced is sufficient to permit a reasonable application to *only* one-fourth to one-third of the 100 million acres of corn grown. In this connection it should be stated that there is good reason to believe that the effectiveness of manure in increasing the yield of corn is (*turn to page* 38)

TOBACCO FIGURES Where is the statistician who can tell us how many times around the earth the 66,000,000,000 cigarettes smoked last year will stretch? The production of cigarettes in 1923 was four times that of 1913, yet tobacco growers, in spite of last year's heavy crop, are able to maintain a uniformly high price. Good red leaf Burley sold at $28 a hundred in Louisville in February. I don't envy anyone the job of conducting an anti-tobacco campaign in the tobacco districts!

MORE BOOKS FOR THE FARMER From a 1923 summary in *Publishers' Weekly* we learn that 225 more books were published in 1923 than in 1922. Of this gain, the largest number, 73 titles, was books on agriculture. This is an encouraging sign. Books alone will not teach farming, but farmers can learn a lot from the right kind of books. Practice and theory are the fore and hind legs of the same animal. A knowledge of sound theory will prove useful to any farmer. It will help to show the way to profits. Let us do all we can to encourage the reading of good books on agriculture.

FARM POWER Governor Pinchot's plan for centralizing the power resources of the state of Pennsylvania has a great deal of merit. Through his "Giant Power Survey" it may become possible for every farmer in the state to receive cheap electric light and power to operate and light his farm. Mr. Harry Cooke, the estimable gentleman in whose

capable hands Governor Pinchot has placed the direction of this work, believes that the farmer is entitled to all of the conveniences and comforts of the city; and he proposes to prove that his plan is economically sound. Every farming state should study Mr. Cooke's work and seek to emulate the excellent progress already being made in Pennsylvania.

PLANTING SEASON — Soon comes the season when spring plowing and planting will take up all of our time. The buds will come, the scent of freshly stirred earth will spring like incense to appreciative nostrils, and afar down the road will be heard the muffled bark of the County Agent's flivver on the wing for the other side of the county! Spring!

COOPERATE — In my feature article on page five this month I've had my say on the subject of "Cooperation." Too many of them have lost sight of the human side of the subject. Human beings are the only animals with sufficient intelligence to cooperate through love of their fellows; animals cooperate only through fear, as the mules form a circle with heads in and hind feet out when the wolves approach. Cooperate is a fine verb; but it doesn't mean anything unless the love-corpuscles vibrate. Merely material and commercial cooperation lacks the spark that kindles success.

Yours to a cinder,

Jeff McDermid

Corn Responds to Potash

(*From page* 35)

undoubtedly due in many cases to the relatively large amount of potash that it furnishes.

The writer has made a careful study of a large number of experiments that have been conducted on the heavier types of soil, that is, the silt loams or "clay," in the Northern States, in which corn and wheat are grown in the same rotation and phosphate alone is compared with phosphate and potash. In many experiments manure is used in such a way that these particular comparisons cannot be made but there are nine experiments in Ohio, ten in Illinois and ten in Missouri that furnish the comparison and in which the response to potash fertilizers is definitely established. These experiments are for the most part located in Eastern or Southern Ohio, Southern Illinois and Southern Missouri.

IN these 29 tests phosphate alone increased the corn yield by 3.4 bushels but potash in addition to the phosphate gave a further increase of 6.2 bushels, so that the total increase for the phosphate-potash fertilizer was 9.6 bushels per acre. The yield of wheat in the same experiments was increased 6.1 bushels by phosphate alone and by 2.4 the addition of potash. Since these experiments averaged 12 years in duration the above data may be regarded as rather conclusive evidence of the fact that many of the heavier soils will respond profitably to applications of potash, and also that corn gives a more pronounced response to potash than wheat.

The fact should be mentioned that in most of the Ohio and in all of the Missouri tests the amounts of potash used were small while in the Illinois tests considerably larger amounts were used. Rock phosphate was used in the Illinois experiments while acid phosphate was the source of phosphorus in Ohio and either acid phosphate or bonemeal in Missouri.

Some of the most successful corn growers have learned the value of potash by experience. For example, Wm. Gilmore, of Ohio who produced 133 bushels of corn to the acre in 1922, used an 0-10-10 fertilizer, and Peter Lux of Indiana, twice winner of the Grand Championship on corn at the International Grain and Hay Show and a member of the Hundred Bushel Corn Club says, that he has found a high potash fertilizer very valuable in producing quality seed and show corn. Both of these men are excellent farmers, they grow clover, keep plenty of livestock and save the manure. Besides they are both farming what the average farmer would call "clay" soil.

Rate of Yield

(*From page* 32)

basis. It is often true that the expenditure of a little more money per acre will produce enough additional crop units to materially reduce the cost of each, and thereby insure profits even in unfavorable markets.

If potatoes or any other crop is going to be grown, enough thought, enough time, enough labor, enough money, should be spent to insure that when harvested, there will be enough bushels to share the total cost and provide a profit. That is a simple business proposition.

He Has the Right Idea

Dear Jeff:

I have never had the pleasure of meeting you face to face, but after reading a few copies of BETTER CROPS, I feel just like I have had a face to face talk with the Editor.

I am going to give you some of my experience on last year's crops. I am just a small farmer and have just started out in the farming business. I had a half acre measured in turnips last year, and I marketed all of them in here our little town. I sold from this half acre $369.65 in turnips, besides which I harvested a spring crop of Irish potatoes from it before I planted the turnips.

I planted my turnips on August 28th and just four weeks later I began selling the young tender plants for salads, and by the time they got roots on them large enough to market, I had them thinned to a stand. I never did hoe them and only plowed them one time, so you see the cultivation was not very expensive. Where my success was in the crop was in the right preparation of the soil before I planted them, and in the fertilizer I used, which was high in potash.

I think that is one thing we are lacking here in our soil—potash. The most of us here know but very little about fertilizers only acid phosphate. We need diversification not only in crops but in fertilizers, farm machines and labor. We have had the negroes here with us all the time and they like cotton better than any crop, and can raise it more successful than any other crop, so we have just about drawn all the available plant food from our soils with cotton. Now we have got to put something back to draw from. We have the legume plant and barn yard fertilizer to furnish the nitrogen, but we have nothing to furnish the potash, and we will have to furnish that from other sources. What we need now in my judgment is a fertilizer high in potash.

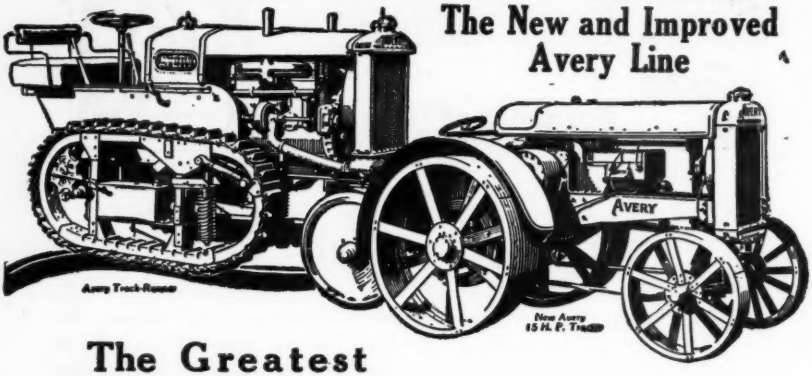
I am going to experiment this year with several different truck crops, also corn and cotton. I believe we can raise cotton successfully under boll weevil conditions, if we will go at it in the right way and use the right methods. I will let you hear from me later with my experiments.

We want to make this poor hill county the garden spot of the south, and I believe we can do it if we will get up and hustle. I want to say right here that it takes hustling to accomplish any thing. We can not be lazy and successful.

Wishing you and BETTER CROPS much success, I am

Very truly yours,

R. E. Jernigan, Louisville, Miss.



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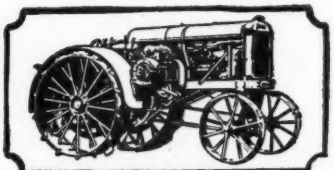
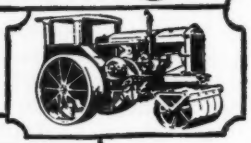

Improved Avery 20-35 H. P. Tractor. Also built in 25-50 and 45-65 H. P. sizes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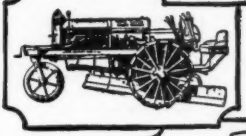
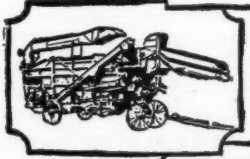
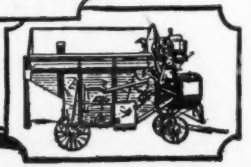

Avery "Road-Razer"

Avery Motor Truck


Avery Grain-Saver Thresher. Built as "Yaw-Baby," "Yellow-Kid" and "Yellow-Fellow" sizes.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By Ted Butlar

BETTER CROPS' Washington Correspondent

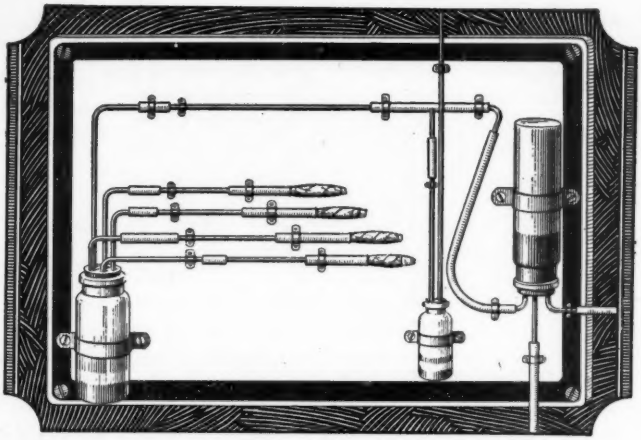
If the farmer can be legislated out of some of his trouble, Congress has plenty of raw material on hand with which to work. The last roll call shows that some 500 odd bills have been tossed into the Congressional hopper *which directly or indirectly affect the welfare of the American farmer.* And some of them are "odd" indeed.

Six of the more important measures call for capitalization or appropriation of an even $1,775,000,000. If all of the bills now before Congress were enacted into law the farmer would have plenty of the "long green" on hand, at least for the present moment. No one has attempted to compile the total appropriations proposed in all agricultural measures, but it would be safe to place it far in the billions.

What are some of these measures which have been framed with the hope of getting the farmer out of the mire? Well, the bill which has caused the greatest excitement and which has taken up most of the time of the two agricultural committees, would establish an export corporation with the power to buy up the surplus in the home market in order that the domestic supply would rise under tariff protection to a price equal to that of things which the farmer must buy. The exportable surplus purchased by the government agency would be sold on the world markets and the farmer would be billed for the expected loss incurred in order that increasing prices would not stimulate over-production. The corporation would be capitalized for $200,000,000. This bill has a lot of friends, particularly from the Northwest, and a host of enemies who contend that it plays havoc with economic laws.

President Coolidge has placed his approval on a bill which as amended would provide a sum of $75,000,000 to be loaned farmers, especially those who have been hard pressed in the spring wheat regions, in order that they might get away from one crop farming and practice diversification. It would be loaned only to farmers who are unable to get money elsewhere. As it stands to date this bill has a good chance of being passed. At any rate it is in a more advantageous position than its brethern, for the reason that it has the blessings of the President.

A Kansas Representative is author of a bill which would authorize the Secretary of Agriculture to pay not to exceed $1.25 a bushel for wheat. An Idaho Senator has gone him one better and has introduced a bill which would establish a corporation capitalized at $300,000,000 with the power to pay $1.50 (*turn to page 52*)



Drawing from photo furnished by Bureau of Plant Industry, U.S.A.

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NEVER before has science possessed so exact an instrument as this smoking machine for comparing the burning qualities of the various leaves by a common standard.

What makes "good burning" tobacco? That question has been accurately answered now by chemists, cigar manufacturers and planters—in extensive tests. We know now definitely that "good burning" cigars are due to the *chemical properties inherent in tobacco leaf.*

If you are interested in tobacco culture, *it will pay you to read "Better Tobacco"* a booklet explaining these recent discoveries.

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Farmers are adding lime to soil to correct acidity. Potash and acid phosphate are being used with wonderful results. Sixty-six dollars worth of Sedan grass seed has been realized per acre off over two hundred acres.—*L. C. McIntosh, Benton, Ind.*

Our Motto for Northeast Oklahoma for 1924:

1. A home orchard and garden on every farm.
2. Only high producing cows and hens on the farms.
3. Terracing rolling lands.
4. Grow legumes on every farm.
5. Lime acid soils.
6. Several sources of income on every farm.—*A. F. Houston, District Agent, Stillwater, Okla.*

Just finished re-organizing the Whatcom County Cow Test Association, 155 members owning 1,785 cows—one tester handles this Association. Accredited Hatchery & Breeders Association just completed—50 members, 32,000 hens. No pullet breeders used. Cockerels only from 225 egg dams used in breeding pens.—*H. B. Carroll, Jr., Whatcom, Wash.*

Weather mild. Plenty of rains. Crops all harvested. More fertilizer being ordered for 1924 than was used in 1923. Farmers generally in good spirits and will make a determined effort to make a good crop in 1924. Probably small increase in cotton acreage. No surplus labor but apparently enough. —*E. P. Scott, Green, Ala.*

An intensive tomato improvement campaign is being put on in Virginia in the counties of Essex, Northumberland and Westmoreland for the benefit of tomato growers in the canning sections. The object is to increase acre yields and to improve the quality of the fruit. County Agents Crosby, Hubbard and Chase are handling the work with some assistance from the State Vegetable Specialists.—*A. G. Smith, Jr., Montgomery, Va.*

The results of our Poultry Marketing Ass'n. have been very satisfactory this year. This is the second year for it. Last year we shipped a car load of dressed turkeys to Los Angeles for the first time. This year we are sending two car loads to the New York market. Poultry has increased 200% the past 18 months and promises well for the future.—*G. F. Holmstead, Sevier, Utah.*

Redwood County is just starting off a purebred sire Campaign in cooperation with the Minn. Holstein-Friesian Breeders Assn. A sales force of five experienced salesmen, mostly local breeders will do the work. Requests are already in for 30 sires, mostly from farmers now using scrub grade sire. Two breeders and bankers' banquets have been held and meetings in the local communities are being held over the entire county. My part in the campaign is better feeding.—*Lynn Sheldon, Redwood Falls, Minn.*

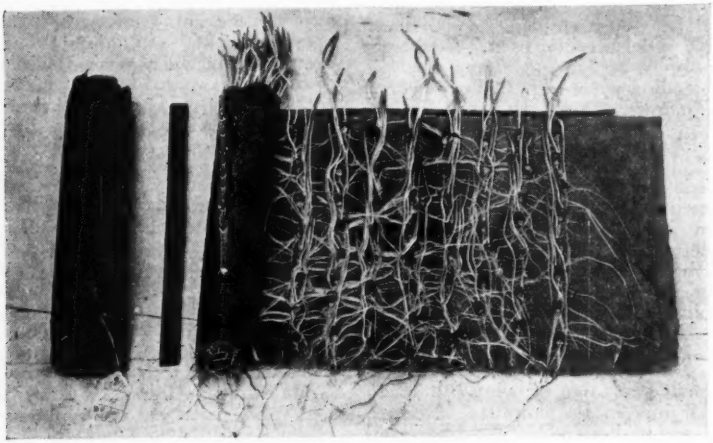
Franklin County Kanota Growers have pooled about 7,000 bushels so they can be properly cleaned and graded for seed. These are certified by the Kansas Crop Improvement Ass'n. We have a larger number of growers, a larger acreage and a larger number of bushels for sale than any other Kansas County. We sold them last year from Youngstown, Ohio to Amirillo, Tex. Soy bean acreage will be increased in 1924 and we will have to buy seed of Morse, Virginia and Midwest.—*F. J. Robbins, Franklin, Kans.*

A Modern Doll

(*From page 31*)

works in practice. It is hardly worth while for the individual farmer to purchase racks, germinator box and other necessary equipment, so the proposition was first tried on a community basis three years ago, by the vocational students of the Shelbyville, Indiana, High School, under the supervision of County Agent Russell East and Vocational Teacher E. L. Austin. A large number of Shelby County farmers brought their seed ears to be tested. On 22 farms accurate records were kept with the remarkable result that the tested seed gave increased yields averaging over 11 per cent as compared with the yields from the seed of untested ears. Looking at the situation from another angle, if the entire corn crop of the United States is planted with tested seed this year the increased yields at the same rate would mean a tidy sum of about $20,000,000 in the pocket of the American farmer. Further experience in Indiana has demonstrated that an average increased yield of at least 10 per cent may reasonably be expected from the use of properly tested seed corn.

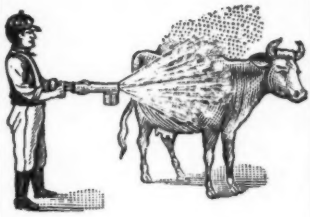
The Shelbyville demonstration was an eye-opener to Indiana farmers who were quick to see the value of tested seed. The work spread over the Hoosier state like oil on water until 50 counties did community testing during 1923. Practically every county in the state has planned to test seed corn on a community basis during 1924 and the work has been taken up by canning factories, seed firms and others interested in the production of good corn. Most community testers are operated by individuals or vocational classes and a charge ranging from one to two cents per ear is made for the work. It is interesting to note that testing at the rate of two cents per ear has



The modified rag doll showing the glazed paper that insulates each row of kernels against infection from its neighboring rows.

paid for all the testing equipment installed at the Shelbyville High School and left a surplus during 1922 sufficient to cover the expenses of an educational trip to Purdue taken by the entire class. Mention of the necessary equipment brings to mind the fact that the Purdue Experiment Station has designed a highly efficient home-made germinator box with a capacity of 2240 ears for which blue prints may be had for the asking.

The story of community testing to eliminate weak and diseased seed corn is an interesting page in the agricultural history of the Hoosier state. The pioneer work in Indiana has blazed a trail that is already being followed by other corn-producing states and that will in all probability soon wend its lucrative way into the majority of the corn-belt states.



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HAMMOND'S PAINT & SLUG SHOT WORKS
Beacon, N. Y.

Cooperative Marketing and the American Bankers Association

(*From page 24*)

more stable prices, less speculation and less violent fluctuations of bank deposits.

4. Much good has already been accomplished by many of the cooperative associations in getting better financial results for the producer through more efficient distribution, better merchandizing and systematic grading and standardizing of the farmers' products.

5. Cooperative associations will undoubtedly market considerably more farm products this year than they did last year. New associations are being formed and old ones enlarged.

6. The greatest danger which cooperative associations have to avoid is the temptation to hold commodities for speculative purposes, and to attempt to unduly increase the price by artificially withholding the products from the market when actually needed, instead of disposing of them in an orderly way as the demand for them justifies.

7. There is one further step which cooperative associations should take in order to permanently establish their credit. They should retain out of each year's operations a certain percentage to be set aside as a surplus or reserve fund to be used in case of need. The action of the Staple Cotton Growers Association of Mississippi furnishes one of the very best examples of this principle. In each of the three years in which it has operated that association has set aside in a so-called advance fund approximately $400,000, with the result that it now has what practically amounts to a capital of over a million dollars, and is therefore prepared for any emergencies which may arise. Naturally the bankers in their section are more anxious to do business with them than they are with any similar organization, because they feel that they are amply protected in their dealings, and the Association consequently enjoys the very highest credit and has not the slightest difficulty in getting whatever accommodations it needs.

8. As a result of the campaign of education conducted during the past year, there has been a great improvement in the credit facilities available for the cooperatives. Many commercial banks who heretofore stood aloof have now been induced to participate in some of the loans made to the Association, and there is no doubt that very large sums of money are now available by commercial banks at current rates for properly conducted cooperative associations.

I cannot forbear telling what is to me a very interesting story, the story of the conversion of one of my friends, a wide-awake, conservative banker, to the idea of cooperative marketing. The banker in the story is C. S. McCain, Vice-President of the Bankers Trust Company of Little Rock, Arkansas.

It seems that a couple of years ago when the matter of organizing a cooperative marketing body was considered in Little Rock, the matter was talked over by McCain and other leading bankers and they decided it would be better to remain neutral awhile and wait developments before giving the movement their moral and financial support. Just about that time, McCain tells, the cashier of his bank came to him one afternoon and said, "We have a bank customer here who owes the bank fifty dollars, and he brought a bale of cotton into town this morning at eight o'clock. He has been here all day and the best offer he has been able to get on the cotton is six cents a pound." Cotton at that time, in July, was not in particular demand, but was selling around eight and nine cents a pound if a buyer could be found.

McCain asked if there was anything the matter with the cotton

and the cashier replied that he didn't think there was and that the owner had gone out of the bank to see if he couldn't get someone to endorse his note so that he wouldn't have to sell it at such a sacrifice.

McCAIN directed that the farmer be hunted up and brought back to his office. This was done and the farmer declared to McCain that he thought his bale was good cotton. He brought in a sample of the cotton which gave every evidence of being a good white grade, properly ginned.

McCain arranged for one of the bank employees to take the man and introduce him to another of the bank's customers, a buyer and exporter of cotton. The buyer asked the owner what he wanted for his cotton and the reply was, "Just an honest price which you can pay and still make some money." The buyer examined the cotton carefully as an expert purchaser will and finally said, "I'll give you fourteen cents a pound." The owner could hardly believe his ears. "However, you'll have to haul it to the compress which is about fifteen blocks down the river."

"Hell—I'll haul it anywhere for fourteen cents," replied the man.

Now the difference between that man getting six cents for his bale of cotton, amounting to thirty dollars total, which would leave twenty dollars still due on his note, and his getting fourteen cents a pound, or seventy dollars for the bale, which would enable him to pay his note and have a margin of twenty dollars, is considerable. McCain says that he saw the buyer the next day and inquired whether the latter had extended the cotton owner a particular favor in buying that cotton. The buyer said, "I will tell you this—I hate to tell you this—but that is the best bale of cotton I have bought this year. It was inch and an eighth strict middling white cotton. I have been trying to fill an order that I have had for some time of one hundred bales of that cotton. I completed it this morning and am shipping out that one hundred bales of cotton of which this bale is one, through your bank this afternoon at thirty-two cents a pound."

Well, McCain said he called a meeting of the Clearing House the following day and told them that he was sold on the cooperative marketing idea. He maintained that whenever a farmer could come into Little Rock and offer for sale to all the cotton firms in town a bale of cotton and not know what he has, not know the grade and staple of it, be offered six cents for it and afterwards get fourteen and the same day have that same cotton shipped out of town at thirty-two cents a pound, that was a question that every banker in Little Rock and every banker in the State of Arkansas ought to be interested in, because they were interested in the farmer's getting all the money he could out of his cotton.

The Cooperative Marketing association was organized and the bankers of Little Rock insisted upon only one requirement, that they should operate under a good business adminstration and on the first election of directors should submit to the bankers of the Clearing House Association the names, so that the bankers could counsel with them.

THAT Association today, McCain says, has a board of directors that would be competent to operate a large business concern in any State in the United States. He claims there is no stronger body of business men in his State or in the entire South. They have made a great success of their organization and they have the confidence of the bankers of the section. One of the leading Southern banks has offered them a loan of a million dollars and McCain's own bank has loaned them large amounts, believing that it is the biggest thing that has ever come to the cotton farmers in the State of Arkansas.

North Carolina's Progress

(*From page* 34)

maples, beef cattle and cheese factories. Late summer vegetables and tourists add additional income. Along the eastern slope is one of the most magnificent apple sections in the world. There, one finds the region of the Thermal Belts, or "no frost." Coming east are the old tobacco belt, the wheat fields and clover fields of the upper Piedmont. Then come cotton and corn and more clover. In the sandhills are the dew berries, tobacco and peaches. East of here are the strawberries and early truck. Just north are the new bright tobacco belt and a great cotton country. Still northward towards the Virginia line is the peanut and soybean section. Over it all is an equable climate, a good rainfall, a comparatively well wooded area and favorable conditions for growing livestock.

FOR years the farmers have been building solidly a sound agricultural practice. They have been fortunate in the type of leadership which has encouraged this farming program. Realizing that where there is a fertile soil, the farmers are prosperous, the agricultural workers have not hesitated to give this first place. Upon this foundation has been built the more extended use of fertilizers, the use of better varieties of the common crops, pastures and those other things which help the North Carolina farmer to live at home.

Take the case of fertilizers for instance. North Carolina probably has more data about the use of fertilizers in improving crop yields than any other State in the South. Nor have the workers hesitated to recommend fertilizers where they have felt that such use would pay returns. They have been specific in the kinds and amounts of materials that should be used and have based these recommendations on actual results secured on the different branch station farms.

In like manner, they found it was not more hogs that North Carolina needed but a better feeding and marketing of those on hand. The animal industry workers, therefore, have said just the kind of rations that these hogs should get and have proved their recommendations by actual demonstrations conducted by farm agents with the growers. The result is that they have proved their case and hog feeding is receiving more attention in North Carolina today.

For about twenty-five years the agricultural workers have been slowly but surely helping to make North Carolina a great agricultural State. The farmers have had confidence in these leaders and their confidence has not been betrayed. By some means, Dr. B. W. Kilgore, Director of the Agricultural Experiment Station and Extension Service and newly elected Dean of the School of Agriculture at the State College, has found funds for carrying on the various lines of work which are under the joint direction of the College and Department. He has rightly been called the "Little big man" of the State He was recently declared one of the "Big Four" in the administration of State affairs and quietly without much ado he has encouraged the workers under him to go forward with their plans looking always to a big self-supporting agriculture where each farmer under his own vine and fig tree might enjoy the fruits of his labors.

JUST this morning a grey haired farmer from one of the lower mountain counties called at my office. "How are things in Polk County?" I asked. "Fine! Fine," he replied, "and getting better all the time."

Old and his hair a hoary white, yet young in spirit and in thought. How like North Carolina today, I thought.

Dangerous Agriculture

(*From page 29*)

thrills to make up for the lack to some extent. The grizzly provides the most excitement for the effort of the man who goes out to stop his marauding. A few weeks ago hunter Peterson in Colorado, with the assistance of his dogs, trailed a 1,000-pound grizzly for several miles and finally got him by a shot in the neck as the big bear was charging him. The records of the Biological Survey contain many businesslike reports of such hand-to-claw encounters.

Some adventures of the hunters are more novel. Perhaps you have heard of the dangerous hydrophobic skunks and have secretly taken a few grains of salt. Prepare to revise your conclusion. A Department man was once badly bitten by a rabid skunk as he lay in his tent and had to be rushed to a hospital for the Pasteur treatment. Sometimes there is an outbreak of rabies among the coyotes on the ranges, a danger to man and beast, and last year the Government called for men from various parts of the West to stamp out an outbreak in one locality.

The men in the laboratories seem to get along with few misfortunes, not because there is no dangerous work to be done, but because they are prepared. Men who examine dogs and other animals for rabies occasionally prick themselves with an infected needle or cut their hands, but proper treatment saves them. Glanders and Malta fever cause most of the accidental deaths in animal disease laboratories, the latter is supposed to have caused the death of a scientist who was bringing over some goats from Italy. The disease is not found in this country, but the goats while in quarantine were found to have the deadly fever.

Uncle Sam tries to make his jobs as safe as possible, but many of his workers are searching in new fields or in distant lands and they know they are taking chances. Still I never heard one of them complain about his dangerous occupation. The probability is they wouldn't trade jobs with anybody, no matter how safe his occupation.

A U. S. predatory animal hunter and his dogs.

Making a More Prosperous Community

(*From page* 21)

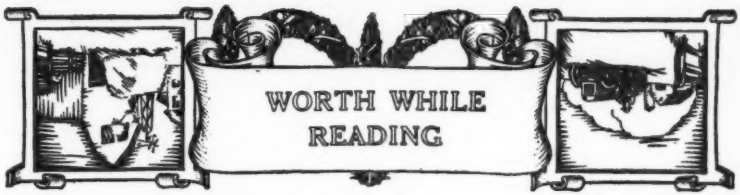
of the soils of communities. Does not this then, unmistakably point to the fact that one of the greatest and most fundamental necessities of our farming is that of securing and applying information that will aid in the economic building up of the productiveness of the soils? No community, state or nation dependent upon its agriculture (and most of them are) can prosper when its soils are not productive. History will bear out this observation.

Since farming, in a general way, cannot be profitable unless good acreage yields are secured and at economic costs per unit, the social and educational advancement of the farm home cannot be most rapid without reasonably good returns from the farming operations. No amount of temporizing along other lines in a broad way can bring prosperity to the masses of our people on the farm. Year in and year out, where farmers do not get good yields, it is not possible to secure large returns for labor and expenses put into their production, it matters not how favorable prices may ordinarily be.

IT is evident, therefore, from the foregoing that farmers must have more productive soils so that larger acre-yields may be secured. For the average farmer, one of the most economical means to aid in building up soil fertility is by the adoption of suitable crop rotations on every farm in which legumes enter, and to utilize the legumes after growth in such a way that they will aid in building up the organic matter and nitrogen supplies of the soil. On the general farm, it should be the rule that at least a portion of the legumes after growth go back into the soil direct. No one can, or has ever been able to remove them from the land, and have their growth benefit that field in a substantial and permanent way. It cannot be done.

HAND in hand with a careful observance of this policy, it is necessary to give crops an adequate supply in the soil of materials carrying available phosphoric acid, potash and nitrogen from commercial sources in sufficient amounts and in the right proportions to produce good crop yields, when all other factors essential to crop growth have been looked after. Commercial fertilizers wisely purchased and used will generally pay handsome returns with most of our crops grown on average soils. Although it is not possible to depend solely upon them in building up a permanent producing power of the soil yet their wise use is generally an essential factor for the purpose with most southern soils. The manure from crops fed on the farm should be carefully saved and go back on the farm with a minimum loss.

Again, after surplus crops have been produced, steps must be taken by farmers to see that the very best returns are secured for them. When fairly good profits are secured, then and not until then, will it be possible for farmers to do what they ought and want to do, under wise guidance, for the betterment of the farm home and the enrichment of country life.



Mock Trial of Soil Robber

One of the most effective ways of bringing home an important idea is to dramatize it. To put over the idea of permanent soil fertility, Mr. H. W. Warner, Soils Specialist of the Iowa State College of Agriculture, has prepared a very clever mock trial of a prominent farmer for Robbing the Soil. In cooperation with the Rural Organization Section Extension Service of the college several mock trials have been held by township farm bureaus in Iowa, which have aroused considerable interest in this important subject.

Mr. Warner's plan includes a diagram of the stage setting, cast of characters, order of court procedure and suggestions for witnesses. Under this last head he outlines the arguments that can be used by both prosecution and defense which summarizes both sides of the case. With a few rehearsals and a little coaching this could undoubtedly be made very amusing and effective. *Mock Trial for Robbing the Soil.—H. W. Warner, Iowa State College of Agriculture, Ames, Iowa.*

Planning and Analyzing the Farm Business

Seldom have we come across a more interesting and worthwhile pamphlet than the one with this title written by F. L. Taylor and published by the University of Nebraska Agricultural College Extension Service.

First of all it is extremely readable which fact alone makes it noteworthy. It is told in the form of a story. The Jones family decide to keep accounts of their farm and at the end of the year they sit down and summarize and analyze where the money came from, where it was spent, how much profit was made and how they can make more next year.

Included in the text are actual reproductions of the account books of the Jones family so that the reader can work out for himself just how the farm was managed. If the lesson of the pamphlet could be instilled into the farmers of the country, it would be one of the most salutary things ever done.—*Extension Circular 800, February, 1924, University of Nebraska Agricultural College Extension Service, Lincoln, Nebraska.*

Electrical Treatment of Crops

Methods for increasing the yield of crops through the use of atmospheric or artificially generated electricity have received the attention of investigators over a long period of years. These methods usually involve considerable equipment and expense and so far have not become popular in growing general farm crops. The shortage of food, particularly wheat, caused by the World War undoubtedly aided in popularizing a method which, if found to be beneficial in results as measured by increased yields, would be of practical value in farming. This treatment consisted in subjecting the seeds of crops, the small grains especially, to an electric currant passing through a conducting solution in which the seed is immersed. This process was patented and brought into use in England in 1917 by De Wolf and Fry, under the trade name "Wolfryn Electrochemical Process." The Process was well advertised in England, and later in Canada, the United States, and Australia.

An interesting little circular has just been issued by the U. S. D. A.,

Department Circular No. 305, February, 1924. C. E. Leighty, Agronomist in charge of Eastern Wheat Investigations, and J. W. Taylor, Assistant Agronomist, Office of Cereal Investigations, Bureau of Plant Industry, report their researches on electrochemical treatment of seed wheat as conducted at Arlington Experiment Farm in 1921 and 1922.

The treatment of wheat seed described in Department Circular No. 305 consisted of passing a current of electricity through a solution of common salt (other compounds have also been suggested) in which the seed was immersed, has been claimed to result in largely increased yields. Experiments made in several countries do not bear out these claims.

Data obtained from replicated plats of winter wheat harvested at the Arlington Experiment Farm in 1921 and 1922 showed no benefit or profit resulting from treating the seed electrochemically by the so-called "Wolfryn" process. Grain yields from all plats sown with electrochemically treated seed averaged 1.1 bushels per acre less than yields from all plats sown with untreated seed. No effect of the treatment on plant growth or disease infection could be observed. *U. S. D. A. Department Circular No. 305, February, 1924.*

The Leglislative Grist Mill

(*From page 41*)

a bushel of wheat and would forbid the importation of wheat except under certain conditions. But first place goes to a North Dakota Representative who has framed a measure calling for an appropriation of $1,000,000,000 with which to fix minimum prices for wheat, corn, cotton and wool. Under this bill the price of wheat would be fixed at $2.00 for Chicago and $1.96 at Minneapolis.

Still another measure would put the government in the business of building warehouses in cooperation with the states to the tune of $100,000,000. Another bill along this line proposes to establish a national marketing organization on a county basis while another would establish a Federal cooperative marketing system. Sort of an over-head machine for all cooperative marketing associations under government supervision.

And so ad infinitum. Several relief measures looking to relief of famine conditions in Germany through the purchase of foodstuffs have found their way into the bill file. And if Henry Ford is to get Muscle Shoals, somebody has got to kill or "talk to death" several other measures which have a different purpose in mind.

Noted Scientist Dies

Recent advices from Germany report the death of Dr. Arthur F. W. Felber, who served the German Potash Industry for almost a quarter of a century.

Dr. Felber's reputation as an agricultural scientist and chemist is well established within and outside of the geographical boundaries of his homeland. He is the author of numerous scientific papers; and agricultural research everywhere mourns in his death the loss of an honest, sincere, and eminently capable worker.

World Consumption of Cotton

During the five years preceding the world war the average world's consumption of cotton was 20,968,000 bales of 478 lbs. net weight, Europe consumed an average of 55 per cent; the United States, 24 per cent; and other countries, 21 per cent of this total. During the four seasons 1919-20 to 1922-23 the average annual world's consumption reached 19,320,000 bales, of which Europe use 40 per cent; the United States 30 per cent and other countries 30 per cent.

Genuine German Potash Salts

can be secured from any of the following distributors:

ALABAMA

Birmingham—
Grasselli Chemical Co.
Virginia-Carolina Chemical Co.
Montgomery—
American Agricultural Chem. Co.
Armour Fertilizer Works
Capital Fertilizer Co.
International Agricutural Corp.
F. S. Royster Guano Co.
Virginia-Carolina Chemical Co.

ARKANSAS

Little Rock—
Arkansas Fertilizer Co.

CALIFORNIA

Azusa—
Geo. W. Fuhr
Covina—
Sun Fertilizer Co.
Glendora—
Frahm & Manning
Los Angeles—
Agricultural Chemical Works
American Agricultural Chem. Co.
Hauser Packing Co.
Mutual Orange Distributors
Southern California Fertilizer Co.
Spreckles Bros. Comm. Co.
Western Meat Co.
San Francisco—
A. M. Bloomer Co.
California Fertilizer Works
Getz Bros. & Co.
Growers' Fertilizer Co
Meyer Wilson & Co.
Mountain Copper Co., Ltd., Fert. Dept.
Pacific Bone, Coal & Fert. Co.
Pacific Guano & Fertilizer Co.
Potash Importing Corporation
Western Meat Co.

CONNECTICUT

Bridgeport—
Berkshire Fertilizer Co.
Hartford—
Olds & Whipple, Inc.
Middletown—
Rogers & Hubbard Co.
New Haven—
American Agricultural Chem. Co.

FLORIDA

Bradentown—
Gulf Fertilizer Co.
Clearwater—
Gulf Fertilizer Co.
Daytona—
Cornelius Christiancy Co.
Eustis—
Gulf Fertilizer Co.
Fernandina—
Nitrate Agencies Co.
Frostproof—
Gulf Fertilizer Co.
Jacksonville—
American Agricultural Chem. Co.
Armour Fertilizer Work
International Agricultural Corp.
Nitrate Agencies Co.
Virginia-Carolina Chemical Co.
Wilson Toomer Fertilizer Co.
Lake Hamilton—
Gulf Fertilizer Co.
Orlando—
Gulf Fertilizer Co.
Tampa—
Gulf Fertilizer Co.
Terra Ceia—
Gulf Fertilizer Co.
Winter Haven—
Gulf Fertilizer Co.

GEORGIA

Albany
Armour Fertilizer Works
Swift & Company
Virginia-Carolina Chemical Co.
Athens—
Empire State Chemical Co.
Georgia Phosphate Co.
Hodgson Cotton Co.
Atlanta—
A. D. Adair & McCarthy Bros. Co.
American Agricultural Chem. Co.
Armour Fert. Wks. (So. Hdqrs.)
International Agricultural Corp.
F. S. Royster Guano Co.
Swift & Company
Virginia-Carolina Chemical Co.
Augusta—
Southern State Phosphate & Fertilizer Co.
Virginia-Carolina Chemical Co.
Baxley—
R. L. Lewis Co.
Columbus—
International Agricultural Corp.
Cordele—
Read Phosphate Co.
Macon—
F. S. Royster Guano Co.
Pelham—
Pelham Phosphate Co.
Savannah—
American Agricultural Chem. Co.
G. Ober & Sons Co.
Mutual Fertilizer Co.
Read Phosphate Co.
Reliance Fertilizer Co.
Savannah Guano Co.
Southern Fertilizer Co.
Swift & Company
Virginia-Carolina Chemical Co.
Toccoa—
Swift & Company
Valdosta—
Georgia Fertilizer & Oil Co.
Vidalia—
Vidalia Chemical Co.

ILLINOIS

Chicago—
Armour Fertilizer Works
Darling & Company
Swift & Company
National Stock Yards,
St. Clair County—
Swift & Company

INDIANA

Hammond—
Swift & Company

Indianapolis—
Rauh & Sons Fertilizer Co.
Smith Agricultural Co.
New Albany—
Calumet Fertilizer Co.
Read Phosphate Co.

KENTUCKY

Louisville—
Armour Fertilizer Works
Federal Chemical Co.

LOUISIANA

La Grange—
Swift & Company
New Orleans—
Armour Fertilizer Works
Nitrate Agencies Co.
Swift & Company
Shreveport—
Swift & Company
Virginia-Carolina Chemical Co.

MAINE

Houlton—
International Agricultural Corp.
Presque Isle—
Armour Fertilizer Works

MARYLAND

Baltimore—
American Agricultural Chem. Co.
Armour Fertilizer Works
Baugh & Sons Co.
Griffith & Boyd Co.
Miller Fertilizer Co.
Nitrate Agencies Co.
G. Ober & Sons Co.
Piedmont Mt. Airy Guano Co.
F. S. Royster Guano Co.
Swift & Company
Virginia-Carolina Chemical Co.
Salisbury—
W. B. Tilghman Company, Inc.

MASSACHUSETTS

Boston—
American Agricultural Chem. Co.

MICHIGAN

Detroit—
American Agricultural Chem. Co.

MISSISSIPPI

Jackson—
Virginia-Carolina Chemical Co.
Meridian—
Meridian Fertilizer Factory
Tupelo—
Tupelo Fertilizer Factory

MISSOURI

St. Louis—
American Agricultural Chem. Co.
Armour Fertilizer Works
Swift & Company

NEW JERSEY

Bound Brook—
Nitrate Agencies Co.

NEW YORK

Buffalo—
American Agricultural Chem. Co.
International Agricultural Corp.
New York—
American Agricultural Chem. Co.
Armour Fert. Wks. (East. Hdqrs.)
International Agricultural Corp.
Mutual Fertilizer Co.
National Aniline & Chemical Co.
Nitrate Agencies Co.
Virginia-Carolina Chemical Co.
Zaldo & Martines Exchange Co.

NORTH CAROLINA

Charlotte—
International Agricultural Corp.
F. S. Royster Guano Co.
Swift & Company
Durham—
Virginia-Carolina Chemical Co.
Greensboro—
American Agricultural Chem. Co.
Armour Fertilizer Works
Swift & Company
Henderson—
American Agricultural Chem. Co.
Lillington—
Farmers Cotton Oil Co.
Harnett Oil & Fertilizer Co.
New Bern—
G. Ober & Sons Co.
Raleigh—
F. S. Royster Guano Co.
Tarboro—
F. S. Royster Guano Co.
Washington—
Pamlico Chemical Co.
Wilmington—
Acme Manufacturing Co.
Nitrate Agencies Co.
Swift & Company
Virginia-Carolina Chemical Co.
Wilson—
Farmers Cotton Oil Co.
Winston-Salem—
Virginia-Carolina Chemical Co.

OHIO

Cincinnati—
American Agricultural Chem. Co.
Armour Fertilizer Works
International Agricultural Corp.
Virginia-Carolina Chemical Co.
Cleveland—
Swift & Company
Columbus
Smith Agricultural Chemical Co.
Dayton—
Wuichet Fertilizer Co.
Sandusky
Armour Fertilizer Works
Toledo—
F. S. Royster Guano Co.

OREGON

No. Portland—
Swift & Co.
Portland—
C. C. Cate & Co
Portland State Co.

PENNSYLVANIA

Philadelphia—
Baugh & Son
I. P. Thomas & Son
Tunnel & Company
Reading—
Keystone Bone Fertilizer Co.
Wadsworth—
Ohio Match Co.
York—
York Chemical Works

SOUTH CAROLINA

Anderson—
Anderson Phosphate & Oil Co.

Charleston—
Amer. Agricultural Chem. Co.
Etiwan Fertilizer Co.
Maybank Fertilizer Co.
Planters Fert. & Phosphate Co.
Read Phosphate Co.
Virginia-Carolina Chemical Co.

Chester—
Swift & Company

Columbia—
American Agricultural Chem. Co.
Armour Fertilizer Works
Darlington Guano Co.
F. S. Royster Guano Co.
Swift & Company
Virginia-Carolina Chemical Co.

Greenwood—
T. M. Miller Co.

North—
J. E. Culler Co.

Spartanburg—
American Agricultural Chem. Co.

TENNESSEE

Memphis—
Virginia-Carolina Chemical Co.

Nashville—
Armour Fertilizer Works
Read Phosphate Co.
Virginia-Carolina Chemical Co.

VIRGINIA

Alexandria—
American Agricultural Chem. Co.

Danville—
G. Ober & Sons Co.

Lynchburg—
Pocahontas Guano Co.

Norfolk—
American Agricultural Chem. Co.
Baugh & Sons Co.
Farmers Guano Co.
International Agricultural Corp.
Priddy & Co.
Robertson Chemical Co.
F. S. Royster Guano Co.
Swift & Company
Virginia-Carolina Chemical Co.

Portsmouth—
G. Ober & Sons Co.

Richmond—
Old Buck Guano Co.
Virginia-Carolina Chemical Co.

WASHINGTON

Seattle—
Balfour, Guthrie & Co.
Chas. H. Lilly Co.

Tacoma—
Stock & Plant Food Co.
Marine Products Co.

CANADA

British Columbia

New Westminster—
Triangle Chemical Co., Ltd.

Vancouver—
Canadian Explosives, Ltd.
Victoria Chemical Co., Ltd.

Quebec

Montreal—
Arthur Lavigeur, Ltd.

Quebec—
George Tanquay, Ltd.

New Brunswick

Bath—
C. E. Gallagher Co.

Hartland—
Hatfield & Co., Ltd.
Home Mixed Fertilizers, Ltd.

St. John—
Gunns, Ltd.

St. Stephen—
Dominion Fertilizer Co.

Nova Scotia

Wolfeville—
T. L. Harvey Co.

Ontario

Chatham—
National Fertilizers, Ltd.

Hamilton—
National Fertilizers, Ltd.

Ingersoll—
National Fertilizers, Ltd.

Toronto—
Swift & Company

West Toronto—
Gunns, Ltd.
National Fertilizers, Ltd.

Wingham—
Gunns, Ltd.

Prince Edward Island

Montague—
Poole & Thompson, Ltd.

If unable to secure the grade of potash you want, write

Dept. B. C.

The Potash Importing Corporation of America

81 Fulton Street **New York**

Branch Office: 311 Chancery Building, San Francisco

A Prize of $50!

open only to readers of BETTER CROPS

FOR the best essay submitted on the subject "Potash Pays" we will give $50 in gold.

Read over the conditions as outlined below. By arrangement with the editors of BETTER CROPS, the prize-winning essay and such other manuscripts as are suitable for publication will appear in the magazine.

The following men have agreed to act as judges, insuring a fair consideration of every manuscript submitted:

Mr. W. R. HURD
Director, Soil Improvement Committee, National Fertilizer Association.

Mr. V. E. PRATT
Publisher, BETTER CROPS

Mr. C. C. SMITH
Potash Importing Corporation

CONDITIONS *of the* CONTEST!

Persons Eligible—All readers of BETTER CROPS, excepting employees of the Potash Importing Corporation.

Subject—The subject must be "Potash Pays" and the subject matter should offer definite proof of this statement.

Length—Manuscripts of over 2,000 words will not be considered. However, essays of a few hundred words have equal chance with longer articles.

Manuscript—It is desirable that essays submitted be typewritten on one side of white paper, preferably regular letter size, 8½ x 11 in., but the judges will give equal consideration to any essay not so written.

Contest Closes—The contest is now open. It will close at midnight, May 1, 1924. All manuscript in envelopes bearing a post mark later than this date will not be eligible.

Basis of Award—In judging the essays the judges will rate them on the following basis: Facts 50%; Photos or illustrations 25%; Presentation 25%. There will be one prize of $50 in gold. In the event of a tie, the writers of each of the winning manuscripts will receive $50 in gold.

Method of Payment—As the contest closes at midnight, May 1, 1924, the prize winner will be announced in the June, 1924, issue of BETTER CROPS and the prize mailed to the winner by May 25, 1924.

Right to Publish—The Potash Importing Corporation of America reserves the right to publish and copyright each and every manuscript submitted in this contest either before or after the closing of the contest. It is understood that any manuscripts so published and copyrighted which do not win the prize shall be paid for at the rate of 1c a word and $3 per photo, according to the number of words and photographs actually published. No manuscripts will be returned.

ADDRESS ALL MANUSCRIPTS TO

Contest Editor

POTASH IMPORTING CORPORATION OF AMERICA
81 Fulton Street New York City

Two Bouquets of Clover

(*From page 27*)

It was found that a difference existed between the soils on which clover grew for two years and those which refused to produce a second year's crop. The main difference seemed to be the texture of the soil, which in the case of failure was a peat or clay muck soil. As a considerable portion of the dairy section of the county was located on such a clay muck and peat soil, the problem became apparent.

A day was set and the county agent proceeded in his inevitable flivver to the Vander Griend arm, armed with scales, water bucket and a sack of potash.

One-tenth acre demonstration plots were laid out and potash applied to the soil at the rate of 100 pounds per acre on some plots and a check plot left on others. The elements interfered, the insects got busy and the first year ended with no results.

There is no question what this farmer thinks about using potash on oats. Left hand side oats without potash; right hand side, 100 pounds applied to acre.

Not discouraged with their first trial, the men tackled the problem again using a high grade potash applied at the rate of 100 pounds per acre to new seeding of clover. With each of the demonstration plots this time, they left a check plot and then put in one with an application of 1½ tons of barnyard manure to the acre.

Plots were increased and F. M. White, another dairy farmer taken into the plan, whose soil was a reddish sandy loam.

The second season closed with better results, for it was found that the stand of clover was promising on the potash plots. In fact it was better with potash than on the barnyard manure plots, yielding an increased production of about one-half ton more per acre. That was fine for the first year's growth, but what of the next year. It was the second season's growth that constituted the problem to be solved.

With considerable interest and more or less anxiety they awaited results. Spring came and the clover showed good growth and, as summer opened, they knew they had found the solution to the peat and muck soils of the county.

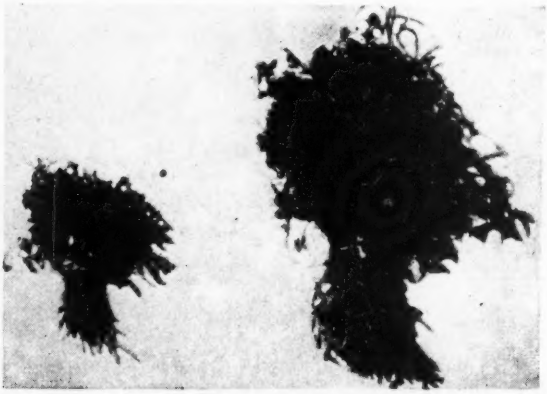
The first crop from the potash plots averaged two tons per acre and the second cutting in August was 21 inches tall. Upon the plots on which the barnyard manure was applied in 1920, the clover was only six inches tall and the first cutting made only a ton per acre, with most of that wild grasses and timothy. The clover had just about run out. As to the unfer-

tilized plot there was no clover to be found.

We have used the word "demonstration plot" throughout this story, and this is where the demonstration part came in. A small tour was organized by Mr. Carroll and farmers with the same trouble visited the Vander Griend farm and saw with their own eyes a fine stand of second year clover. Seeing is ofttimes believing, and in this case it was, for the visitors cooperated and ordered 10 tons of potash for next spring delivery.

And now the two bouquets of clover (the result of three years of work by a county agent, soils specialist, two farmers and a sack of potash) must be introduced. Whatcom county boasts of the finest county fair in the state, and it is no idle boast. Seeking the advantage of placing before all the farmers of the county the results on the muck and peat lands, Harry Carroll made an exhibit at the fair of two bouquets of clover taken from the different treated plots.

He went into the field and from the same sized place, cut a bouquet of clover from the second cutting of the second year's crop, and found that where the ground had received 100 pounds of potash per acre at the time of sowing the clover two years before the clover was 18 inches tall. From the plot which had received ten tons of manure two years before the bouquet was only six inches tall. But from the plot which had received no treatment, there was not enough clover to make a buttonhole flower. The problem was solved. The dairy farmers were out of trouble and the extension service of the State College which employed the county agent and soils specialist had rendered a real service.



Results covering a period of two years' work showing the value of potash vs. cow manure (1920–1921).

Right—Clover cut from potash plot, 18 inches tall (second cutting of second year's crop). Potash applied to muck soil at the rate of 100 lbs. per acre.

Left— Clover cut from manured plot, 6 inches tall (second cutting of second year's crop). Manure applied at rate of 10 tons per acre.

But as one good turn deserves another, the application of potash produced other results. In the sowing of the clover, oats are sown at the same time in the general farm practice, for a cash or cereal silage crop the first year. The

Field of oats without potash.

second good turn of the potash applied to the clover was that it increased the stand of oats.

On the demonstration plots oats had not been planted for the only problem considered was the second year's growth of clover. However, when the ten tons of potash had been applied by the farmers who had seen the fair exhibit and been on the tour, it was found that potash on oats resulted in the grain standing up straight and strong and that it could be cut with a binder without loss.

Where no potash had been used, the grain lodged severely and the yield was considerably lessened. Throughout the county on an average there was an increase of 25 percent due to the use of potash on oats alone, which made an increase of 15 bushel per acre.

"During my seventeen years of farming a piece of pet land" stated one of the farmers to (*turn to page* 67)

Showing the use of potash on oats, 100 lbs. per acre
Note the strength and height of straw

Plowing at the rate of 6 to 10 acres a day, Cletracs make quick work of the biggest fields

Bigger Profits for the Farmer

Not only do Cletracs enable farmers to plow many acres in a day, but they also make every acre turned over produce more, and greater yields mean bigger profits to the farmer.

A Better Seed Bed Insures a Bigger Crop

But Cletracs do more than simply a good job of plowing. They are admirably suited for ground fitting because of their crawler construction. The broad tracks carry Cletracs along over the plowed land without slip at full speed, mellowing the ground into a fine seed bed, but do not pack it down. A well-preserved seed bed is the farmer's best assurance of a bigger yield and a better crop.

A big modern factory with upwards of five acres of floor space under roof and thirty thousand Cletracs in use in the United States, Canada and seventy foreign countries are time-tested evidences of Cletrac's successful operation.

THE CLEVELAND TRACTOR COMPANY

CLEVELAND, OHIO

The Randolph County Farmers Co-operative Association composed of Randolph County Farm Bureau members, has purchased three lots of Elkins and completed a plan to form a stock company of farmers and erect a brick and tile building 48 x 140 and to handle feed, fertilizer, lime, seeds and a complete line of tillage implements. The plan provides for a stock company with $25,000 capital stock, shares to be with $25.00 each and no person to own more than 20 shares. The plan to pay a dividend on the stock owned and a so-called patronage dividend on the volume of business transacted by each member-stockholder during the year. Like BETTER CROPS very much. —*Earnest Caplinger, Randolph, W. Va.*

Three cars "Sodatol" saved farmers over $7,500. These pooled orders—saved sum equal to county cost of agricultural agent for three years. Putting over pure-bred sire campaign replacing 200 scrub sires. Test shown that lime and sulphur make alfalfa almost sure crop. Not much raised at present here.—*Paul C. Adams, Columbia, Ore.*

Franklin County Farm Bureau increased its membership from 450 to 850 last year. 1922 this county sold 1.111 bales cotton through Farm Bureau Cotton Ass'n. In '23 she shipped 1,800 bales. Last season they bought 1,150 tons fertilizer materials cooperatively and home mixed same at a great saving in price. Membership will use more fertilizer per acre on cotton this year. Will not increase acreage of cotton but will sow more hay. Will increase membership 300 this year.—*J. D. Wood, Franklin, Ala.*

Rhode Island State Federation has been lying dormant for two years. Reorganization just been completed. Prof. Harry R. Lewis, formerly of New Jersey Poultry Dept., and now a poultry farmer in Rhode Island elected President. Prospect looks good for a real live federation. — *Sumner D. Hollis, Newport, R. I.*

The plan to establish a Tri-State Executive office for Massachusetts, Connecticut and Rhode Island was approved by the Massachusetts Federation Annual Meeting at Worcester on Jan. 15th and at the Connecticut Federation Annual meeting at Hartford Jan. 17th. It will be presented at the Annual Meeting in Rhode Island in February. — *Walter C. Wood, New Canaan, Conn.*

Cooperative canning of tomatoes is a great success. It is netting the growers above 10c per basket above the contract prices. Also cooperative buying of feed is saving the feeders from $2 to $16 per ton. We pooled a very large order.—*W. V. Cosoen, Kent, Del.*

Our farmers bought cooperatively something over 500 tons fertilizer materials last year and home mixed them at a saving of from $4 to $14 per ton and they hope to move cooperatively this year and we have secured low prices for this year. —*R. L. Blackwell, Gordon, Ga.*

The Cooperative Idea

(*From page* 16)

hampered by legal restrictions, unfair competition, and public and private repression of every kind, has grown into the enormous consumers' cooperative movement of today.

BY 1880, the 28 members had grown to 10,613. The 28 pounds of available capital had increased to 326,255, or about $1,500,000.

In 1864, the cooperatives went into the wholesale business. Also, by this year the total volume of trade had risen to about $15,000,000. In 1913, there were no less than 1,500 cooperative societies, with over 3,000,000 members transacting between six and seven hundred million dollars a year.

In London wherever one turns are found stores of the Civil Service Supply Association, one of the great chains of cooperative stores similarly with other cities and other chains.

Briefly, and ignoring many points of some importance, the great success of the Rochdale enterprise was due (1) to doing business strictly for cash; (2) to efficient, honest, conscientious management, with constant attention to accounting and cost records; (3) to the paying of patronage dividends which brought customers; (4) to furnishing good products at an ultimate net saving compared with shops run for private profit; and (5) to educational work among members and the public as to the high ideals of human service that led to the starting of the enterprise.

Conversely, it may be said that nine-tenths of the cooperative failures everywhere and at all times have been due to a failure to observe the above principles. Control of the cooperative societies was very democratic; each man had one vote, and share capital received a definite and limited interest.

In 1919 the combined number of cooperative societies in the United Kingdom was 1,467, with 4,182,000 members, a share and loan capital of $494,000,000, a surplus of $109,000,000, and total sales of $1,623,905,000.

While Germany ranks high in cooperation as to all types of enterprises, her greatest contribution was the institution of cooperative rural credit, just as England's was the development of consumers' retail distributive cooperation, and the United States' is the marketing of farm products.

The first rural credit bank, so far as known, was founded in Silesia in 1769 by order of Frederick the Great. Slowly others were established. They were known as "Landschaften" provincial land banks, and were created primarily to help the impoverished land-holding nobility of the time. Successful as these proved to be, they operated for eighty years before they were undertaken in other countries.

IN 1852 France started the institution that later became the great Credit Foncier, one of the outstanding rural credit agencies of the world to this day. In an article on land banks, published in Paris in 1900, a French economist and statistician, E. Besson, said of the German land banks:

"The Landschaften, free from the desire (*turn to page 64*)

The Chinese Burbank

(*From page 9*)

California. Its ability to resist the whims of Jack Frost and its productivity make it one of the champion citrus fruits.

Lue Gim Gong—he is now 68 years old and crippled so that he cannot perform much active work in his grove—is a self-tutored plant breeder. Experts say that he knows more about citrus fruit polonization than any other living grower. Lue is the son of a horticultural family. Over in China where intensive agriculture is a highly developed art, Lue began to master the complexities of plant breeding at an age when most youngsters are wrestling with the one cylinder words of the first primer. When Lue was six years old, he could polonize cabbage, lettuce, radishes and rice as adeptly as could his father. The boy spent all his spare moments amidst the growing plants, trying out breeding tests of his own conception.

Lue's dearest friend is an old mare who follows him about like a dog.

WHEN he was twelve years of age, Lue came to America where he was adopted by an American family and was educated like the ordinary American boy. Learning of Lue's skill in plant propagation, his benefactors gave the youngster every opportunity to add to his scientific knowledge and to investigate the riddles of modern horticulture. One of the fruits of this experimentation is a tomato plant now grown commercially in New England which climbs to a height of fifteen feet above the ground and bears luxuriantly. Another takes the form of a succulent early apple which ripens in late June in the latitude of central Masschusetts. A third is a peach which will mature under glass in the vicinity of Boston in November. The cherry currant—a cross of the grape and cherry—is another horticultural monument to the scientific skill of Lue Gim Gong.

Thirty-seven years ago, the Chinese Burbank settled in Florida as manager of an orange grove which his adopted parents purchased there. Immediately, he began to delve into the citrus conundrums of the Alligator State. Night after night, the lights in his little improvished laboratory burned un-

til after midnight. Before undertaking and field experimentation, Lue would read up about all phases of the problem. He would then initiate his orange grove tests. Despite his advanced age, the decrepit Chinaman still continues his technical explorations of the advantages and weaknesses of citrus fruits. The American orange and grapefruit industries have increased their annual incomes by millions of dollars as a result of the studies and investigations of Lue Gim Gong who has done much to take the "ifs" and "buts" out of commercial citrus culture.

DESPITE his oriental origins Lue has influential friends by the thousand scattered here and there and everywhere over America. The faith of citrus growers who appreciate the assistance of the aged Chinaman took the form of financial aid which latterly has rescued Lue's grove from the auction block. Like many another genius, Lue Gim Gong was a poor business man. He gave all his notable discoveries to American agriculture. He asked neither royalty nor commission. His citrus farm has always been more of an experimental project than a commercial enterprise. For years, Lue has spent his principal in research investigation. Old age found him practically poverty-stricken. He mortgaged his land and then could not even pay the interest on his debts. Florida friends heard of his straits, raised a large purse and rescued his little farm from the moneylenders. They have guaranteed to care for Lue Gim Gong as long as he lives. Lue says he will repay their kindness with one of the most epochal discoveries made during the history of the citrus industry—a piece of research that has been his hobby for years which he soon hopes to complete and present to mankind.

The Cooperative Idea

(*From page 62*)

for profits and devoted to the consolidation of their reserves, are in a position to offer peculiarly favorable conditions to their clients. From this point of view we may truly consider the German institution as the one which best expresses the ideas of solidarity and mutual assistance towards which the institutions of our time are aiming more and more."

About 1860 joint stock mortgage banks came in and gradually state land and land improvement banks.

In 1849, Raiffeisen, the true father of long time credit for the small farmer, started his first cooperative credit society. He was the burgomaster of his native village of Flammersfeld, near Coblenz, in the Rhine Province. A poor man, he was moved by the misery of his peasant neighbors to try to save them from the exorbitant interest rates of the private money lenders. His first cooperative was a bakery, formed in 1848. It brought the price of bread down 50 per cent. His second was a cooperative cattle buying society, also formed in 1849.

Almost immediately thereafter, in 1850, Schulze, of Delitzsch, started his first short time personal credit society.

Both movements progressed slowly, and with difficulty, as was the case with the Rochdale pioneers in England. Later, through better public understanding, the efficient performance of their functions, and encouragement from the state, their increase became rapid. The same was true of other cooperative societies and as long ago as 1912 there were 20,435 of all kinds in Germany. They were combined in 41 unions or federations comprising the following:

Central cooperative societies and business institutions	77
Credit societies	13,606
Supply and sales societies	2,241
Dairy societies	2,193
Societies of miscellaneous kinds	2,318
Total	20,435

In the next issue of BETTER CROPS *Mr. Brand will conclude this article by discussing the development of cooperation in the United States and the most significant phases of its present status.*

Cotton Rust

(*From page 11*)

In 1918 the trouble was reported as causing the most serious losses in the Coastal Plain regions of South Carolina, North Carolina, Georgia, and Alabama,and also locally in Mississippi and Louisiana and on the 'buckshot' lands of Arkansas."

"The losses range from slight to as much as 50 or 60 per cent, with an estimated average for the entire cotton belt of 4 to 5 per cent."

"How to Recognize Rust"

"Cotton fields affected by the common rust do not usually produce normal growth. The plants are small and lack a healthy green color. The leaves first begin to show a yellowish mottled appearance about the middle of the season, the parts near the veins remaining green longest, while the tissues between the veins, and hence farthest from the food supply, turn yellow. They later take on a reddish brown color, curl up, and drop off, leaving the stalk bare. The top bolls of such plants either fail to set or mature imperfectly, so that the lint produced is short and of inferior quality."

"The trouble is usually noted in definite spots or irregular areas in affected fields, and unless remedial measures are applied may recur year after year in the same places."

"This disease is liable to be confused with certain other cotton troubles, especially with the true rust caused by a fungus attacking the leaves and with injury caused by red-spider attacks. Red-spider injury is also referred to as red-rust. These mites attack and cause a reddening of a part or all of the leaf. In extreme cases defoliation of affected plants results. The mature red-spiders or the yellowish younger

Cotton Rust Experiment by E. Mickelson, Neeses, S. C.

Incomplete Fertilizer (without potash). Yield: 650 lbs. seed cotton per acre.

Complete Fertilizer (containing 400 lbs. Kainit per acre). Yield: 920 lbs. seed cotton per acre.

Cotton Rust Experiment by E. L. Jenkins, Midland, Ga.

No Fertilizer
Yield: 480 lbs. seed cotton per acre.

Complete Fertilizer (containing 200 lbs. Kainit per acre).
Yield: 868 lbs. seed cotton per acre.

Complete Fertilizer (containing 400 lbs. Kainit per acre).
Yield: 912 lbs. seed cotton per acre.

ones, together with their fine webs, can usually be found on the under side of the discolored leaves, and thus the trouble can be distinguished from rust."

"Control of Rust"

"Cotton fields which show general and severe rusting are usually in need of rotation with other crops in order to build up the humus supply which has been exhausted by continuous cotton cropping. The plowing under of green-manure crops, such as rye, cowpeas and velvet beans, or the addition of a liberal application of stable manure will do much to improve soil conditions and prevent rust."

"Supply vegetable matter to the soil. Use fertilizers containing potash. Drain the wet fields.

"The use of kainit at the rate of 200 pounds per acre or of 50 pounds per acre of muriate of potash, or the application of other potash-containing fertilizers will also help reduce rust damage."

"Cause of Rust"

"Rust is a reaction of the cotton plant to soil conditions unfavorable to normal growth and development. It is not due to the attack of any disease-producing organism or to injury by insects."

"The most common causes for rust are lack of humus or vegetable matter in the soil, lack of potash, and lack of drainage. Many fields with naturally light or poor soils are planted to cotton year after year with little or no attention to keeping up the supply of vegetable matter which is essential to vigorous growth. The result is an increasing occurrence of rust the longer the practice is maintained. Such soils are also usually deficient in potash, and if it is not supplied in sufficient amounts in the fertilizers rust will develop when the supply furnished is used up by the plant. Rust, or potash hunger has been more general and serious the past few years, owing to the difficulty of securing the normal supply of potash on account of the war."

"Rust often develops in poorly drained fields or in low spots, while higher parts are free from it. Likewise, some fields may develop rust as a result of heavy and continuous rains in the latter part of the season."

Two Bouquets of Clover

(From page 59)

Mr. Carroll, "I have never received greater value out of an expenditure of $55.00 than I did out of the amount spent for a ton of potash this year."

It was in the fall of 1921 when the two bouquets of clover were exhibited at the Whatcom county fair. Two years later (1923), in speaking of the results, Mr. Carroll said: "Thirty-two farmers cooperated this year in securing a shipment of 100 tons of potash and super-phosphate. The superphosphate for the high lands and the potash for the peat and muck lands. This shipment of 100 tons was used on 1,460 acres of hay at an average increase above cost of fertilizer of $10 per acre, or $14,600, and 260 acres of oats at an average increase above cost of fertilizer of 21 bushels per acre, or $110, making a total saving due to fertilizers of $14,710."

"I base the saving on an increase made by using potash at 1¾ tons of clover hay per acre and six tons of cereal silage per acre. Twenty-one bushels of oats per acre and two tons clover hay per acre was the increase made with phosphate on the upper lands.

"From ten pounds used as a trial to 200,000 pounds shipped in and being used this year, is our record. We will do better this year (1924). for a large shipment of potash and phosphate is expected as 40 tons have already been ordered."

How One Community Solved a Problem

(From page 7)

hundred trees and consisted of two units, each operating a power sprayer. The original plan was to purchase one sprayer but the organization committee soon found that the number that wanted to join was too much for one sprayer, hence the second unit. Unit number one consists of sixteen hundred trees and is taken care of by a Hayes sprayer, two hundred gallon capacity with eight gallon per minute delivery. Unit number two has twelve hundred trees and a Meyers one hundred gallon tank sprayer.

The organization has for its officers, a president, a treasurer and a secretary in each unit. These men, together with the County Agent, compose an executive committee which is responsible for the management of the spray ring during the year. The executive committee purchased the sprayer, employs the operator, works out the routes and is responsible for the sprayers.

The initial cost of the sprayer was made on a round assessment on the per tree basis and cost twenty-one cents per tree in unit number one and twenty-four cents per tree in unit number two. The constitution of the spray ring provides that should any member drop out, if some one could not be found to replace him, he would be paid off and the cost reassessed among the other members. This has not occurred so far. The greatest difficulty has been to have to refuse the few neighbors who were skeptical at first and who now, having seen one year's work of the spray ring, are clamoring to come in.

An operator was employed by the executive committees for each unit, and did the spraying for the entire season. Each member provides a team or a tractor to pull the sprayer and a helper to drive. He delivers the sprayer to the next one on the route and pays for the operator's time, figured on the beginning of his operation until the sprayer is delivered to the next member. The route is reversed for each trip so as to give each member priority of the sprayer. A spray record card is filled out in duplicate after each spray operation and one given to the member and the other to the Secretary of the unit. The spray record card tells what time the operator started, what time he finished, amount of material used, fuel, etc. The secretary records this in a book, so that we have a complete summary of materials, costs, etc., for each member.

The average time of spraying varied with each member, according to the size of the trees, proximity of water, lay of the orchard, etc., but the general average was around three hours to get over a hundred tree orchard. Many of the delays experienced last year will be overcome this year by better planning and also by the use of a motor tank filler.

The average fuel cost for the season was 1.9 cents per tree and the operators expense 6.4 cents per tree. Cost of repairs was assessed the members at the end of the season and amounts to a quarter of a cent per tree.

As most of the members had purchased their spray materials, no effort was made to purchase this cooperatively, which accounts for the wide variation in costs of spray

material per tree, which averaged all the way from five to seveteen cents. This will be overcome this year, as the records will show the exact amount of materials used and thus permit these to be bought wholesale at the beginning of the season.

The satisfaction of the members after one year's trial and the quality of fruit produced at Pfeiffer's Corner is sufficient evidence to enable us to call the spray ring a success. Not all of the members kept account of their sales but it is sufficient to say that all are highly satisfied and at a recent meeting of the local each member exhibited a sample of sprayed fruit. The result was that two other communities have expressed a desire for cooperative sprayers, so that this year we expect to have over 5,000 trees, heretofore unsprayed, receive a full spray schedule.

Not only this, but the spray ring has been one thing which has brought the community together. The Pfeiffer's Corner Farm Bureau Local points with pride to their spray ring as an evidence of their cooperative spirit and they are proud of its record. There is no doubt that the cooperative sprayer is the solution of their small orchard problem and the plan can be used successfully elsewhere, providing care is taken in organizing it and the right men are selected as leaders.

Foot-and-Mouth Disease in California

Foot-and-mouth disease, from which this country has been free since 1916, has just made its appearance in California, according to an announcement made to-day by the United States Department of Agriculture. The Secretary of Agriculture has declared a quarantine on the counties of Alameda, Contra Costa, and Solano, and the Bureau of Animal Industry, in cooperation with the livestock sanitary authorities of California, is taking steps to prevent the spread of the disease and to stamp out the infection.

Scouting for forest fires over a National forest in an airplane

Cooperate—can you do it?

(*From page 6*)

woven through with a common warp of a sort. If bridges are to be built, roads made, factories established, agriculture forwarded, marketing simplified and education brought to perfection, men must work together and not against one another. No bee can run a hive—it takes a swarm working enthusiastically and happily together upon a participating plan.

The shoulder-to-shoulder idea is not a new one, nor do I project it here as new. I am leading, this time, from the general to the specific in order to get my thought before you; whereas it is usually my plan to work from the specific to the general. Variety is the spice of life.

You know there are two kinds of cooperation—the conscious and the subconscious. When you buy a ticket to Chicago you do not get a whole train to yourself—you ride with several hundred other good folks, all of whom happen to be going your way and whose interests are, for the time at least, identical with your own. You are unconsciously cooperating with those other folks on that trip. You go for a few dollars, whereas if you hired a train all to yourself it would cost you a young fortune. That is unconscious cooperation, the kind that goes on about you every day, and the fruits of which are so obvious that a discussion of the economics would be valueless.

BUT the conscious kind of cooperation is the type that requires an effort; ofttimes it requires an heroic subjugation of self that some men cannot stand.

What I am actually getting at is this, "Can *you* cooperate?" I know that your instinctive answer will be, "Of course!" but I am taking a perogative that only "Old Jeff" can take with his readers and ask that you think deeply before you make me such a cock-sure answer. Think a moment, brother. Do you cooperate with others whose interests are or should be identical with your own?

DO you *consciously* cooperate with others? Even when this "heroic subjugation of self" comes up for decision? If you can always answer boldly, "Yes," then here is my hand, partner; you are one of a small but powerful minority. There *are* men, you know, who would rather bust up the whole works than to lose their point—they must have their way even though it means the end of things. And there are still others who believe that they have done their share when they join a cooperative body of one sort or another and have placed themselves in a position to authoritatively criticize the management!

Even though you do not like the way the other fellow wears his tie, cooperate with him if his interests and yours are the same. Letters cooperate and make words, words cooperate and make sentences, sentences cooperate and make paragraphs. Individuals like you and me are the instruments of a Big Plan—each fitted for the most exacting work. But you should and must cooperate with other individuals if harmony is to result.

No man is in competition with others—he is for the most part in competition with his own mistakes and errors of judgment. Each of

us harms himself a precious lot more than it is in the power of anyone else in the world to harm us. How foolish, knowing this, to refuse to work in unison with other folks.

In all this wave of cooperative effort that is now swelling o'er the land, and in which you, my friend, are undoubtedly called upon for a brave part, let "Old Jeff" ask but this one thing: that whenever the word is mentioned you think of the mental side of the question, and ask yourself, "How can I help the other fellow on his own job?" That is *real* cooperation.

Give Them an Early Start

(*From page 14*)

admirable example for some of us older folks. They are made to see the advantage of improved breeding of livestock and latest accepted methods of farming through actual competition lessons which will enable them to undertake farming in later years with a keen sense of how best to do things."

The familiar statement that oftentimes the "boy's pig becomes the father's hog" met the reaction of Mr. Gore. "Don't let the pig leave the boy's hands," he commented. "Promote and foster the club that enables the boy to raise a pig to marketable age. Let him see and enjoy the results of proper breeding, feeding and care, not only of the pig but of the hog.

"In the different contests only a limited number can win but you cannot take from the boy or girl who has undertaken this work the benefits of sustained effort along a given line. The value of friendship, contact and knack of meeting difficult situations, acquired by the boy or girl while members of these clubs give them a tremendous advantage over other boys and girls when they are called upon in the years to come to take charge of this great agricultural machine of ours. Prizes are delightful to possess but friendship, love of work, loyalty, and other by-products of club work are the things upon which the fabric of society is based."

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Captain Kidder comments on this month's issue

It has always seemed to me that the boys' and girls' club work is worth every ounce of energy and attention that can be given it. That is one reason why I was so delighted to see that Jeff had got Mr. Gore to talk on this subject. I think the photographs that Mr. Gore so courteously supplied are unusually fine and there is a big story connected with each one. "More articles on this same subject" is my cry. What say you?

Much as I like to kid my friend, Jeff, I have to hand it to him for his article on cooperation. "That's the best thing you've written yet" I said to him after I'd read it. I think you will agree with me and I hope you'll give it a wide circulation. Every last one of us can profit by his message.

In writing about Lue Gim Gong, I noted that Mr. Dacy made no mention of one aspect of Lue's character that I have always admired. Lue is extremely religious and in a very sincere and admirable way. After he has shown visitors through his orchard it is his custom to take them to a table in the center of the orchard and ask them to read a chapter of the Bible. This simple and beautiful ceremony makes a deep impression on most visitors and I mention it because it seems to me no estimate of Lue Gong is complete that does not include this side of his character.

This number seems to be largely devoted to the Carroll family. I understand that Mr. J. S. Carroll who contributed the article on "Cotton Rust" is a Southerner while Mr. Harry J. Carroll, Jr., who is mentioned in Mr. Lounsbury's article and who, himself, contributes an item to the "News from County Agents" is apparently a live wire Westerner. So far as I know they're not related but they have at least one common interest—better crops.

I notice the make-up editor has made some typographical improvements in this issue. Perhaps he wanted to celebrate the beginning of the second volume by giving us a new dress—or maybe it was the approach of spring that stirred him. Anyway, I like the appearance of the magazine which has always been one of its distinctive features and will, I hope, continue to be so.

Professor Hansen made a special effort to get the story about the Modern Doll in the present issue because he felt it would be of value to our readers who are concerned with raising corn. Many thanks, Professor! We hope to see some more of your poison plant articles before long.

My one real kick on this issue is that it hasn't enough stories about people. I like to read about the struggles and experiences of county agents, extension workers and all the others who are fighting the battle for better crops of one kind or another. Perhaps Jeff is waiting to hear from you.

Captain Kidder

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